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THE EVOLVING WORK ENVIRONMENT IN NEW ZEALAND

IMPLICATIONS FOR OCCUPATIONAL HEALTH AND SAFETY

NOHSAC TECHNICAL REPORT 10

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Findings at a Glance

Work is changing dramatically in contemporary New Zealand. This is generating new occupational disease and injury risks and exacerbating existing ones. The OHS challenges arising from the following labour market trends have been examined in this report:

- The recasting of labour supply – increasing proportions of women, Māori, Pacific Island, younger and older people are engaging in paid work.
- The changing content of work – an increase in the service industries and the mechanisation of traditional blue collar work.
- New technology – the greater diffusion of information and communication technologies, nanotechnology and biotechnology at work.
- Hours of work – long and increasingly ‘non-standard’ hours of work are being performed.
- Non-standard forms of employment – increasing casual, contract, temporary contractor and outsourced work arrangements.
- Changing flows of work and labour – especially changing recruitment, retrenchment, retirement and re-engagement labour flows.
- Business organisations – particularly the size and nature of a business enterprise.
- Gaps in workforce representation – associated with declining unionism and significant self-employment.

These changes are intensifying. The prime OHS challenges arising from them are:

- an increasing need to engage with a more demographically diverse working population (especially female, Māori and Pacific Island workers, and younger and older workers)
- declines in traditional occupational hazards of the past are being off-set by problems associated with long periods of sitting or standing and repetitive movements, such as obesity and RSI
- the re-emergence of older hazards such as fatigue arising from the long hours worked by many employees
- increased risks arising from poorer training, shorter employment tenures and lower propensity to report adverse events amongst employees engaged in more precarious work arrangements. These arrangements are often associated with risk shifting, manifested in newly outsourced and supply chain arrangements.

The implications for improving regulation and surveillance are profound. Arrangements that once worked for a more homogeneous workforce engaged by clearly distinct, formal workplaces need to become more sensitive to the risks associated with an increasingly fragmented labour market. In particular, there is a need to undertake the following:

a) Better monitor:

- hours of work regimes to better capture both fatigue (arising from duration) and stress (associated with who determines hours and intensity of work)
- the operation and impact of employment situations where workers are engaged on the basis of non-standard employment contracts
- risks of ‘softer’ (but no less problematic) injury such as stress, obesity and RSI
- hazards associated with nanotechnology and biotechnology.

b) Devise new protocols

These should build on data collected from better surveillance arrangements. New protocols are especially needed for new regimes of working time and precarious forms of employment. These protocols need to note how hazards are often compounded. For example, the growing demographic groups are disproportionately represented in non-standard hours and precarious employment settings. Their disadvantaged status in the labour market limits their bargaining power and makes them vulnerable to unsafe or hazardous working situations.

c) Supplement established enforcement structures with new arrangements

The changing structure of businesses means greater attention needs to be devoted to engaging more effectively with supply chain and similar arrangements. While 70 per cent of employees are engaged by four per cent of businesses, the remaining 30 per cent are not necessarily scattered amongst isolated business units. Engaging with supply chains and other production/service provision networks can provide an effective way of monitoring and enforcing OHS standards. Such arrangements are important for protecting the self-employed in particular. With the decline of unions, such arrangements also have an important role to play in protecting employees' OHS standards.

SECTION ONE

EXECUTIVE SUMMARY



This report examines how labour market and workplace restructuring is generating new occupational disease and injury risks and/or exacerbating existing risks in New Zealand. It draws primarily on previously published reports in New Zealand and overseas, as well as extensive statistical material on the New Zealand labour market. Interviews with key New Zealand informants knowledgeable about this topic have supplemented desk-based research.

In reporting our findings about these key dimensions of work and working life, we have firstly summarised existing information and projections on key trends in the New Zealand workforce and work environment; secondly, identified occupational health and safety risks associated with workplace trends and workforce changes; and finally, identified surveillance and research requirements for pro-active management of the key risks.

1.1 CHANGING LABOUR SUPPLY: THE SIGNIFICANCE OF RECENT DEMOGRAPHIC SHIFTS

Labour market trends

It is well known that workforce participation has been rising for most population groups in recent decades. Between 1991 and 2006, for example, women's labour force participation increased from 54.4 to 61.3 per cent. For other groups, such as Māori, not only have participation rates risen, but unemployment rates have fallen from more than one in four in the early 1990s to around eight per cent today. As the population ages, more people are extending their working years into later life.

OHS challenges

A number of OHS challenges arise from these developments. The needs of male and female workers are very distinct. Men account for 73 per cent of all work-related injury claims and also account for four to nine times more claims for work-related diseases than women. Increasingly, problems associated with an obese workforce will become more common. The changing age profile creates problems at both ends of working life. Younger workers require more support and proper acculturation concerning safe working practices. The jobs they occupy are amongst the most marginal – with weak traditions of training and poorly structured managerial support networks. Older workers are often highly skilled. However, they often increasingly work on a self-employed basis. Both groups have amongst the highest levels of reported injuries and diseases. Greater attention needs to be devoted to responding to these shifts.

Implications for surveillance and research

Most of the problems for surveillance and the effective enforcement of OHS standards associated with these developments arise not so much from the nature of workers themselves, but more from the jobs they occupy. Women, older and younger workers, as well as Māori and Pacific Island workers, tend to be concentrated in particular parts of the labour market. The jobs are often of a precarious nature, and the workers occupying them usually have limited bargaining power. There is a lack of quality information and research on these groups of workers and the jobs they occupy. This reflects, in part, a significant and growing gap in regulatory capacity. It is unlikely that there will be a radical shift in the nature of jobs occupied by different demographic groups in the next 10 years. It is therefore critical that the New Zealand OHS authorities develop the capability for monitoring and responding to the changing scale and nature of risks emerging as these groups become increasingly important in the New Zealand workforce.

1.2 CHANGING CONTENT OF WORK: INDUSTRY AND OCCUPATIONAL RESTRUCTURING

Key developments

One of the most significant and ongoing changes in the nature of work in New Zealand is the changing content of work, as the industrial and occupational structure of the labour force evolves. Like most developed western economies, New Zealand has seen successive industrial and occupational transformations towards more service oriented industries, with consequent reductions in the significance of work in agriculture, forestry, fishing and manufacturing, and the rise of occupations in clerical, retail, care and hospitality work.

In less than a decade, the proportion of people working in primary and secondary industries has declined from around one-quarter to about one-fifth of the labour force. Except for construction (which has experienced an increase in its workforce), there is an ongoing decline in work in industries involving heavy, physical labour. This trend has reduced the incidences of many of the classical occupational diseases and injuries of the past. Further, within industrial occupations, there has been a growth in occupations in non-manual type activities, such as plant and machine operators. The exceptions here are trades workers and elementary occupations, both of which increased more rapidly than the workforce as a whole. The changing distribution of occupations is similar to that of industry, with workers in agriculture and fishing declining, while services and professional occupations are growing rapidly (by as much as 50 per cent in some cases) in little more than a decade.

Emerging OHS challenges

Proportionally fewer people and increasing mechanisation in industries such as agriculture, construction and manufacturing are changing the nature of occupational health and safety risks. Nevertheless, the highest incidence rates for workplace injury remain in these industries. It follows that the capacity to reduce OHS injury rates will be determined very much by changes in the design and safety attributes of work in those industries. The rise of service-based work and the mechanisation of traditional blue collar work have also been associated with unique OHS challenges. The service sector is safer in terms of the sorts of muscular-skeletal injuries associated with physical labour (although there are increased risks in some of these activities associated with some care and emergency work because of increasing obesity). Service sector work, however, does have its own risk characteristics. Issues such as long periods in standing or seated positions, the repetitive use of certain limbs, as well as stress and factors associated with changing work patterns and terms of employment present a range of new and emerging risk factors for occupational injury. It should be noted that some of these risks are developed in relation to demographic and labour flows and technology, rather than the content of work itself.

Research and surveillance needs

The report identifies the changing content of work as one of the challenges for OHS surveillance and monitoring. In particular, it suggests that there is a need for greater monitoring of such developments as hazardous substances, problems of stress, RSI and other 'softer' (but no less problematic) injuries.

1.3 NEW TECHNOLOGY

Labour market trends

Technological innovation is a characteristic of most modern economies. Previously manual tasks have become highly automated, and information and communication technology has changed the nature of global interaction. 'Work-extending technology' has allowed the further invasion of work into the private sphere. Upgrading technology has a significant effect on labour demand and, consequently, has significantly altered the structure of

the labour market. Technology is increasingly replacing low- and semi-skilled labour and creating a demand for more highly skilled professionals and technicians. This has led to the creation of a 'knowledge economy'. Production processes in manufacturing, mining, construction and agriculture and the distribution of goods and services in the transport, warehousing and logistics industries have been impacted by increased advances in technology. The decrease in people employed in the agriculture, forestry and fishing industries over the past 15 years is attributable to increased use of mechanised technology.

OHS challenges

Advances in technology are associated with a decrease in physical activity and increasing obesity levels. However, this relationship is complex, with some research indicating a direct causal relationship, while other research denies the role automation in the workplace has in developing obesity. It cannot be denied, however, that obesity is a growing phenomenon in industrialised nations. This not only impacts on obese individuals themselves, but can also be troublesome for workers in healthcare and other occupations where direct lifting of obese people can cause back strain and other muscular-skeletal injuries.

The increased use of technology in the office and the increased mechanisation of primary industries have led to more repetitive physical activity. The ergonomic benefits of mechanisation in the forestry industry have not been realised and, instead, has led to an increase in strain and repetitive injuries, such as carpal tunnel syndrome and repetitive strain injury (RSI), shoulder and neck strain, as well as other muscular-skeletal injuries. Complexity of technology is another potential source of OHS risks. There is concern that confusion, disorientation and fatigue resulting from the use of complex technology may increase the risk of exposure to injury.

Advances in technology are not only limited to the information and communication fields, or mechanisation. The OHS implications of emerging fields such as biotechnology and nanotechnology are still unknown and therefore need to be monitored.

Implications for surveillance and research

Increasing levels of obesity and incidences of muscular-skeletal injuries from repetitive physical activity are OHS problems that have been around for some time now. In New Zealand, there already exist OHS guidelines for both problems. However, emerging fields of technology (particularly nanotechnology and biotechnology), though currently regulated, need to continue to be monitored, as the health and safety implications of working with these technologies are still relatively unknown.

1.4 HOURS OF WORK

Recent developments

Long working hours continue to prevail in New Zealand. Around one-third of New Zealand workers are working more than 40 hours a week. Legislators, administrators and managers; plant and machinery operators and assemblers; trades workers; and agriculture and fishery workers are the occupations most likely to be working an extended (50 hour) week. Men are generally working longer hours than women, though this can be attributed to a larger proportion of men working full-time. As the data for working hours by gender are not available disaggregated by part-time/full-time employment status, it is difficult to accurately compare the extent to which men and women differ in their long working hours. However, when unpaid work is taken into account, men and women appear to be working similar hours each week.

The deregulation of the labour market in the early 1990s has been associated with the increase of hours worked outside of the standard 9–5 day. Increased temporary work, evening work and weekend shift work are particularly prevalent amongst Māori and Pacific Islanders, who constitute a large component of those employed in jobs with these hours.

Emerging OHS challenges

Long working hours are likely to exacerbate the impact of other occupational risks simply by increasing exposure in the workplace. Long working hours resulting in overtime has been associated with poorer outcomes in terms of subjective health, injury rates, illness or mortality. In low-reward jobs, overtime has been associated with particularly negative effects on work-life balance and mental health. Diminished psycho-physiological performance and higher rates of injury have been found when 12-hour shifts are combined with work weeks longer than 40 hours. Decreased alertness, increased fatigue, diminished vigilance or greater injury frequency between the ninth and 12th hour of 12-hour shifts has also been found. Further, risk may be increased if workers choose longer hours for purely financial reasons or they are allocated them for organisational reasons. Risk of injury is also increased for ageing employees working extended hours.

While longer hours may increase risk for only some workers, it seems likely that countervailing factors, such as improvements in technology, the decreasing prevalence of manual work and changes in injury reporting practices, may have disguised some of the negative effects of longer hours in recent years. Various forms of shift work, particularly those requiring night or early morning work, have long been recognised to have negative effects on fatigue, mood, subjective health and performance. Growing evidence has linked shift work, particularly when it includes night work, to cardiovascular and gastrointestinal disease, reproductive disorders and cancer. Varying levels of evidence that shift work causes peptic ulceration, ischaemic heart disease, female reproductive disorders, obesity, diabetes mellitus, hypertension and disorders of the immune system has also been found. There is a need to disentangle the causative effects of long hours and shift work on the one hand, and injury and disease on the other. Smoking, for example, is often considered a confounding factor in shift work studies and is statistically controlled during data analysis. Several cross-sectional studies have, however, linked shift work to an increased risk of smoking. The same may be true of other variables used as statistical controls, such as obesity and stress. Particular care should be taken to evaluate the appropriateness of statistical controls when evaluating evidence on the impact of shift work on health or mortality.

Research and surveillance needs

Internationally, there is a tendency for working hours, especially irregular hours in non-standard employment, to be poorly recognised in OHS management systems. It is important that efforts to provide tools and protocols to recognise and manage risks associated with different working hours regimes are supported by regulatory requirements for better monitoring of working hours and assessment of associated OHS risks. National data on working hours in New Zealand are currently limited; organised surveillance should be considered a priority, and the possibility of regulating very long hours should be considered if they prove to be widely prevalent. There is also a strong need at a national level in New Zealand for regular collection of more extensive and representative data on the amount and types of shift work being performed. Finally, regulatory attention should be given to the balance between the flexibility sought by employers to adjust staffing to economic and technological demands and that sought by employees to manage work-life conflict and enhance autonomy; indeed, changes by the former are more associated with OHS risks than those of the latter type.

1.5 NON-STANDARD WORK AND THE INCREASINGLY PRECARIOUS NATURE OF WORK

Labour market trends

Non-standard and precarious work, including casualisation of the workforce, temporary work, part-time work and multiple job holding, has increased in recent years. This has been associated with the deregulation of the labour market in the early 1990s. This shift in employment patterns is symptomatic of an increasingly demand-led labour market. Casual and temporary work enables employers to take up and let go of labour according to market demands and can be beneficial for some employees who appreciate flexible work practices. However, it can be detrimental for some employees who have no choice but to sacrifice stable employment.

Women, young people, older people, as well as Māori and Pacific Islanders are all more likely to be affected by the increasing casualisation of the workforce. Part-time work is most likely to be undertaken by young people, older people and women with caring responsibilities, while temporary work is usually associated with migrant employment and the agricultural, retail, construction and manufacturing industries. Multiple job holding is limited, with women more likely to be multiple job holders than men. The industries of agriculture, forestry and fishing, as well as accommodation, cafés and restaurants have high turnover rates as well as high rates of injury claims.

OHS challenges

International literature suggests that employees in casual and precarious work are far more susceptible to workplace injury than those who are employed in full-time fixed positions. Workers in precarious employment tend to carry out the most hazardous jobs, work in poorer conditions and receive less OHS training. High turnover and the short-term nature of temporary work reduce the likelihood of OHS training for employees, placing not only precarious workers at risk of workplace injury, but also their colleagues. Temporary workers may also be less inclined to take sick days or time off in case it jeopardises future work, and this can mean that minor injuries or illnesses become aggravated. Finally, the lack of control that precarious workers are able to exert over their task or job role can have profound implications for the health and wellbeing of employees.

Implications for surveillance and research

The implications of non-standard work are not confined to one subset of workers, but have consequences for the wider workforce. This must be recognised when developing OHS policy interventions. Further, precarious work forms can sometimes hide OHS risks. For example, it can be difficult to identify the source of hazardous substances when there is a precarious workforce in contact with them. It is suggested that some form of workforce monitoring designed to capture more transient groups of workers should be undertaken.

There may be regulatory problems for temporary workers that also need to be addressed, for example, some temporary workers have their pay tied to a specific amount of work (such as contingent pay systems like trip rates, trucking or piecework), which encourages intense and unsafe work practices. New types of policy interventions may be required to address work that is fundamentally precarious. It is suggested that a reconsideration of the current OHS surveillance and research be undertaken to consider precarious workers.

1.6 CHANGING FLOWS OF WORK AND LABOUR

Labour market trends

Over the past 15 years, New Zealand has seen an increase in migrant workers, particularly skilled migrants working as professionals. Temporary and seasonal migrants are also increasing in New Zealand, as labour shortages in the horticulture and viticulture sectors are required to fill them. Working holiday makers have also increased slightly. Older people are remaining in the workforce longer, by delaying their retirement. In the tight labour market, redundancies are becoming less common as employers struggle to retain staff. Where they occur, retraining is often needed to help those displaced back into work. This is particularly an issue for low-skilled older persons, whose skill base is often less desired in the changing work environment. Retraining is also often needed for women returning to the workplace after long periods of absence and for workers in declining sectors, like manufacturing, who need to learn new skills to remain in the labour market.

OHS challenges

Difficulties re-entering the workforce for older people may result in temporary and insecure employment. The OHS implications of this type of work were discussed above in Section 1.5. This is also true of temporary, seasonal and working holiday migrants. In such cases, their work is defined more by its temporality and precarious nature than by the actual work undertaken. Unpaid work, a highly gendered issue, can have spillover effects in the workplace, exacerbating potential OHS risks.

Implications for surveillance and research

Changing labour flows are linked to changing labour market demographics and the changing nature of work. The employees filling migrant, working holiday and seasonal jobs are the same workers who are filling temporary, casual and other precarious work. These are the workers who are marginalised and are at a higher risk of OHS injury. OHS regulation needs to not only be aware of these non-traditional jobs and the workers employed in them, but must seek to monitor and regulate potential impacts emerging from this type of work.

1.7 BUSINESS ORGANISATIONS

Labour market trends

There has been no real change in the proportions of small, medium and large enterprises comprising the New Zealand economy. Enterprises without any employees (or sole traders) make up the majority (64 per cent) of New Zealand businesses, with small businesses (consisting of at least one and less than 20 employees) making up a further third (33 per cent) of the New Zealand employer base. However, the four per cent of businesses that employ more than 20 people ultimately employ 70 per cent of the workforce.

OHS challenges

Business type and size have OHS implications. While there exists OHS regulation in organisations consisting primarily of volunteers, it has been found that managers of these organisations have been slow to understand or apply the requirements of OHS regulation. There is no simple relationship between the size of a business and OHS processes and outcomes. Small enterprises have been found to have worse ergonomic, physical and chemical work environments; however, psychosocial factors are better in smaller businesses, while OHS management systems are of a higher standard in larger enterprises. Non-compliance with OHS practices by small businesses is not only due to ignorance, but may be an intentional response to financial and competitive pressures.

Implications for surveillance and research

While large organisations are often willing and able to operate sophisticated OHS management systems, there needs to be recognition that the shifting of production and service delivery to smaller enterprises is often conducive to a fracturing of the management of OHS. While the regulation of unpaid work exists in the voluntary sector, unpaid work undertaken outside the workforce and its impacts on employee performance during work time needs further research.

1.8 GAPS IN WORKER VOICE: EMPLOYED AND SELF-EMPLOYED

Labour market trends

Union membership in New Zealand had a dramatic decline during the early 1990s; however, it has been increasing somewhat in recent years. Union membership is still disproportionately higher among public sector employees and disproportionately lower among primary and service-based industries. However, there is also a noted lack of worker representation due to the changing legal forms of employment. Changing information and communication technology is facilitating an increase in working from home, and increasing reliance on supply chains is creating more possibilities for subcontracting to smaller businesses. While subcontracting is on the rise, self-employment decreased slightly from 2001 to 2006.

OHS challenges

Declining unionisation has been seen to have adverse consequences for OHS standards in the workplace. With decreasing union representation has come a reduction in both the quality and quantity of training of health and safety representatives. Changing forms of employment have also resulted in declining awareness of OHS issues. Surveillance of OHS issues is often limited to larger organisations, which means that self-employed, subcontractors and persons working from home can avoid OHS compliance. Self-employment requires individuals to stay informed of hazards in the workplace, which may not necessarily be their main priority, and therefore is more likely to fall by the wayside. Non-compliance with OHS regulation has also been seen to be common amongst the self-employed. Research into injuries of subcontractors has found that there is a reluctance to make injury claims, with the risk that injuries may become chronic and debilitating.

Implications for surveillance and research

Declining unionisation means other agencies need to take a more active role in promoting and enforcing OHS standards. While the New Zealand Council of Trade Unions is involved in monitoring and support of OHS requirements, greater support is still needed from other government agencies. The incidence of subcontracting, self-employment and working from home has created a gap in which there is no worker 'voice'. Without worker representation (which has usually been carried out by unions), people engaged on the basis of these changing forms of employment are vulnerable to poor, or no, OHS regulation. This is particularly worrying, as psychosocial risks such as work intensification and poor work/non-work balance associated with changing forms of employment are not well documented. It is recommended that there should be discussions on conducting a workforce survey similar to the five-yearly survey conducted by the European Union. There is also a need to consider engaging with those at the head of supply chains/production networks to ensure both the specification of standards and those held responsible for honouring them align with modern business arrangements.

1.9 MANAGING EMERGING OHS RISKS: IMPLICATIONS FOR SURVEILLANCE AND RESEARCH PRIORITIES

The final chapter outlines some general findings about the implications of this study for surveillance and research priorities. Many key informants interviewed in New Zealand were concerned about the scale and design of current regulatory arrangements. Recent resourcing and organisational design priorities (for example, organisational restructures) have, according to many interviewed, left New Zealand ill prepared to grapple with the new OHS challenges arising from the changing nature of work.

When considering policy for moving forward, it is noted that there are limits to what can be achieved within the context of current policy mix in New Zealand. This limits the level of resources and organisational capacity available for engaging with new challenges. Yet there is still room for specific initiatives to deal with the growth of precarious and non-standard employment and flexible working hours, in particular. This is probably best achieved by developing new guidance material for stakeholders and devising more innovative approaches for monitoring and intervening in changing labour market and business structures. Particular attention needs to be devoted to regulating supply chains, tracking multi-risk factors and more recent problems such as ‘presenteeism’.

SECTION TWO

INTRODUCTION



2.1 NATURE OF WORK

The working environment in New Zealand, in keeping with the experience of most western industrial societies, has undergone massive change in the past two decades. This change has been most pronounced in growth of the contingent workforce, but there has also been dramatic change in the demographics of the labour market, particularly the growth in labour market participation by women. Underlying these changes have been associated structural changes in modes of production in many industries, with the emergence of new technologies, the outsourcing of elements of production, reduction in the size of units of production and the emergence of new forms of work organisation. An additional consideration, less pronounced in an immediate sense but of great significance into the future, is the ageing of the population. The context for all these dramatic changes has been the shift to globalised economic relationships.

These seismic shifts have occurred relatively shortly after the transition to performance-based regulation of occupational health and safety.ⁱ Many of the settings upon which that transition was predicated (such as high union density and centrality of nation state controls) have declined in presence and influence. The shift from more prescriptive regulation of occupational health and safety had not been completed by the time the world of OHS became much more complicated by these changes in the workplace.

2.2 ORGANISATIONAL CULTURE AND CONTEXT

It is important to note that enforcement of OHS regulation, whether prescriptive or performance-based in character, has always been complicated by the fact of its 'organisational context'. It is, in large part, this argument that has supported the transition to performance-based regulatory frameworks and associated preventative programmes. Hopkins² argues that OHS regulation is not well served by a strict compliance approach since the risk of "unintended and undesired outcome(s)", i.e., accidents, in the workplace is accepted. The point of OHS regulation is not to prohibit the harm that results (prescriptive regulation), but rather to encourage the effective management of the risk that may lead to harm (performance-based).

The efforts of Andrew Hopkins and many others, including key members of the research team, have emphasised the centrality of the workplace 'culture' as a key determinant of OHS outcomes in this changing environment. Key aspects of this debate are the levels and effectiveness of workplace consultation and commitment of management at all levels to the achievement of positive outcomes. Related matters include the importance of support for workforce representation and consultation^{3,4} and the tendency for outsourcing of functions, in some workplaces to include the effective delegation of managerial responsibilities for OHS by principal employers.⁶

A key area for inquiry is the extent to which changes to job structures and working arrangements have translated into changes in workplace culture.

Sensitivity is also required to the underlying demographic changes and their impact. The ageing of the workforce and its gender constitution become major issues. The existing worldwide OHS 'blind spot' of long latency disease becomes particularly important in this regard. The expectation of increased longevity of the workforce may not be realised if suspicions that life-long exposures to chemicals may lead to increased incidence of occupational disease are realised. This concern is compounded by evidence of increased working hours – exposure standards to recognised (as distinct from yet to be established) hazardous substances are most often based on eight hour working day exposures. The risks associated with an extended life-long exposure at increased hours per day are

i The Robens report¹ was produced in 1972, but its implementation was delayed until the introduction of the Health and Safety in Employment Act 1992.

effectively uncontrolled on current settings. It is abundantly clear from NOHSAC's previous publications that there is an acute awareness of this vulnerability. An important recent contribution to the debate surrounding adequacy of existing workplace exposure surveillance arrangements has been made by the joint report commissioned by the Office of the Australian Safety and Compensation Council and the New Zealand National Occupational Health and Safety Advisory Committee.⁸

Central to all efforts is an increased understanding of the methods by which OHS harm prevention programmes can be more closely aligned with the existing and emerging workplace culture. Emphasis upon issues of workplace culture become particularly important if available evidence is to be the basis for policy directions into the future. There is clear evidence that the major workplace changes under review were initially driven by a desire by employers to 'spread the risk' (and associated costs) of engaging directly employed workforces on conventional (now, perhaps, historical) terms. While it remains unclear, and probably irrelevant to the NOHSAC remit, whether these types of identified workplace changes were deliberately intended to escape OHS specific obligations, it is clear that confusion has been created. It is the confusion over the cascading duties and obligations under modern OHS arrangements that becomes important in policy terms.

The complexity around the regulation and enforcement of occupational health and safety is both philosophical and practical in its nature and its impacts. This report will focus on the practical issues and their interface with the changes that have occurred and trends for the future in New Zealand's workforce and workplaces.

2.3 STRUCTURE OF THE REPORT

No attempt at a comprehensive review of changes in the workplace and the implications of these for OHS has been completed prior to now. Perhaps the most ambitious recent attempt is that undertaken by the European Agency for Safety and Health at Work (EASHW). This comprehensive series of studies published between 2005 and 2007 surveyed the views of OHS experts on emerging risks⁹⁻¹¹ and are landmarks in the field. The current report has benefited enormously from the findings of these studies. Unlike the EASHW reports, this report begins its analysis by presenting empirical changes in the workplace and working life in New Zealand. This evidence is then used as the basis for analysis of their impacts on existing OHS risks, as well as their potential to generate new OHS risks. The regulatory challenges in the New Zealand context are then developed from this analysis.

Throughout this report, existing academic and policy literature is reviewed in order to establish key changes in the workplace and the labour market and their associated risks as identified in current literature. Each chapter includes an analysis of the potential for these changes to increase both existing and emerging OHS risks. Chapters also incorporate interviews conducted with key informants where their experiences are evidence of emerging, associated or existing OHS risks in the workplace. (Please refer to Appendix 1 for information on key informants.) Each chapter concludes with some comments on research and surveillance needs that arise from the review.

2.4 THE IMPACT OF OHS STATISTICS

Before proceeding to examine the changing nature of work in New Zealand, it is worth identifying the impact of this change on official OHS statistics and other occupational health surveillance systems. Official OHS statistics for most developed countries (often based on workers' compensation/work-related social security claims) would, at first glance, provide no indication that the changes in work arrangements over the past 25 years pose any real concerns in terms of OHS. These generally indicate an overall downward trend (at least until recently) in the

incidence of work-related morbidity and mortality, at the same time as use of these work arrangements has grown. However, this trend may underestimate, or hide completely, continued high levels of harm, for a variety of reasons.

First, official OHS data is seldom organised or presented in a way that enables comparison of outcomes in terms of job security/tenure or employment status and the growth of more precarious employment. Further, the coverage of groups such as self-employed and home-based workers and the effects of gender and inter-industry shifts in employment is masked by the categories in which the statistics are presented. General labour force data in many countries remain deficient when it comes to measuring particular work arrangements (such as temporary employment in New Zealand), home-based work, temporary agency workers and the like. Even had employment status been recorded in OHS data, there would have been no basis for comparing it with workforce data to determine incidence and frequency rates. While studies of the health and safety effects of job insecurity and contingent work arrangements can be identified as early as the 1960s, a rapid escalation of published research only occurred from the mid-1990s. It is still often difficult to use even disaggregated workers' compensation claims data to explore these connections because precise information on employment status is missing, agencies have not tracked the association between downsizing or outsourcing and changes in claims performance, and there can be serious reporting effects. (A number of exceptions, mainly studies conducted in the USA, are to be found in the references for this report.)

Second, some key indicators (such as psychological distress as measured by the General Health Questionnaire or hazard exposures/disease) are not covered (or not covered well) by workers' compensation claims or other official OHS surveillance data. Hence, these associations are difficult, if not impossible, to explore using the latter. There is growing recognition of the limitations of official OHS data in many developed countries leading to the increasing use of surveys (like the five-yearly EU workforce survey undertaken by the European Foundation for the Improvement of Living and Working Conditions)²⁷ and other sources (see, too, the assessment of occupational safety and health programmes in small businesses¹² conducted by Lamontagne and colleagues in Victoria).

Of possibly greater importance than the decline in formal coverage has been a drop in effective coverage (i.e. the failure to make claims) amongst some groups of workers (such as temporary or leased employees) due to ignorance of their entitlements (exacerbated where there are genuine ambiguities referred to above), fears for job insecurity or lost income, job churning (making linking a claim to an episode of employment more difficult, especially in relation to disease or chronic injuries) and regular shifts in employment status. In Australia, survey evidence indicates that fewer than half of injured workers make a workers' compensation claim (many relying on Medicare, social security or their own resources), and the claim rate is substantially lower amongst part-time workers – the closest surrogate we have for contingent workers.¹³ There is a need for further research into the claims behaviour of specific groups like seasonal workers. A recent Australian study¹⁴ suggests return-to-work outcomes for injured labour hire workers were significantly worse than direct hire workers. Even in countries that have integrated workers' compensation into their social security system (such as France), claim shifting is encouraged by the different (i.e. higher) payment levels for work-related injuries and disease. The accident scheme in New Zealand probably reduces the extent of claim shifting, but this requires further investigation.

Third, it is important to note that the growth of precarious employment is also likely to impact adversely on other surveillance and reporting systems. In many developed countries, employers are required to notify government OHS agencies of any serious injury/incident in their workplace. However, inspectorates we have interviewed in Australia readily concede that there is a considerable level of non-reporting, especially in industries like farming/agriculture and in small businesses – both areas where there is a significant level of contingent work arrangements. The proliferation of small worksites, some transient and some using illegal immigrants (or others working in contravention of their visas, such as backpackers or students) has meant more workplaces unknown to inspectorates. Similar reporting problems have been identified in other countries.¹⁵

Most importantly perhaps, more volatile or mobile workplaces, job churning in particular industries (like hospitality) and more complicated work histories are not conducive to clinical diagnosis of work-related illnesses, cohort or epidemiological studies, or the accurate recording of occupation on death certificates. Again, these issues have a wide resonance. In her study of the French nuclear industry,¹⁶ Thébaud-Mony found that subcontractors received 80 per cent of the total workforce radiation exposure, and this had significant implications for both the identification of hazard exposures, management responses and deficiencies in regulatory responses. Whatever the problems precarious employment poses for the recognition and treatment of injuries, this can be multiplied when attention is turned to hazardous substance exposures and the threats to worker health and wellbeing arising from psychosocial factors.

SECTION THREE

KEY TRENDS IN WORK AND THE WORKFORCE IN

NEW ZEALAND



This chapter looks at the key trends in New Zealand’s workforce over the past 15 years. This sets the scene for understanding emerging issues in work in later chapters. The chapter ends by reviewing existing international academic and policy literature to establish the key emerging risks and existing policies to manage them.

3.1 THE CHANGING NATIONAL LABOUR MARKET

The workforce in New Zealand has been undergoing significant growth and many substantial interrelated changes in the last few decades. The Employment Contracts Act 1991 has had a significant impact on the working arrangements of New Zealanders. Permanent employment has become less common, as temporary and casual work becomes more prominent.

As with the experience of several other western (and many developing) economies, the growing labour demand has placed increasing pressure on the existing labour supply. This has encouraged employers to tap new sources of labour. Currently, there are about 3.3 million working-age people in New Zealand of which 2.3 million are in the labour force, either engaged in paid work of looking for work. Figure 3.1 shows the breakdown of the working-age population in New Zealand.

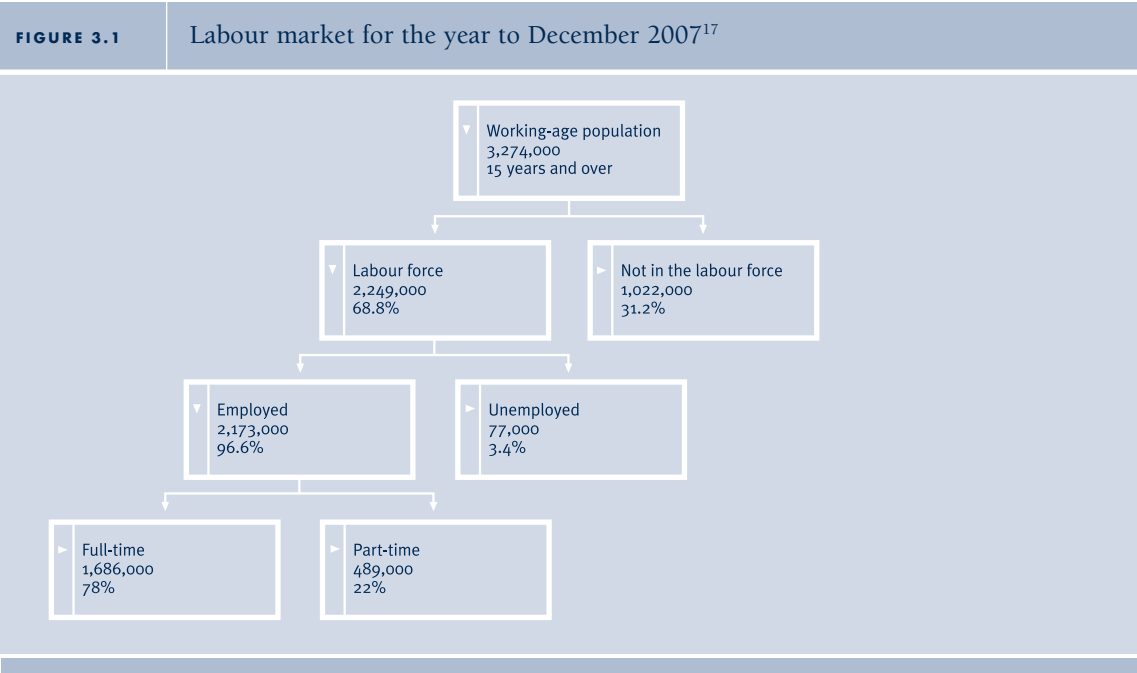
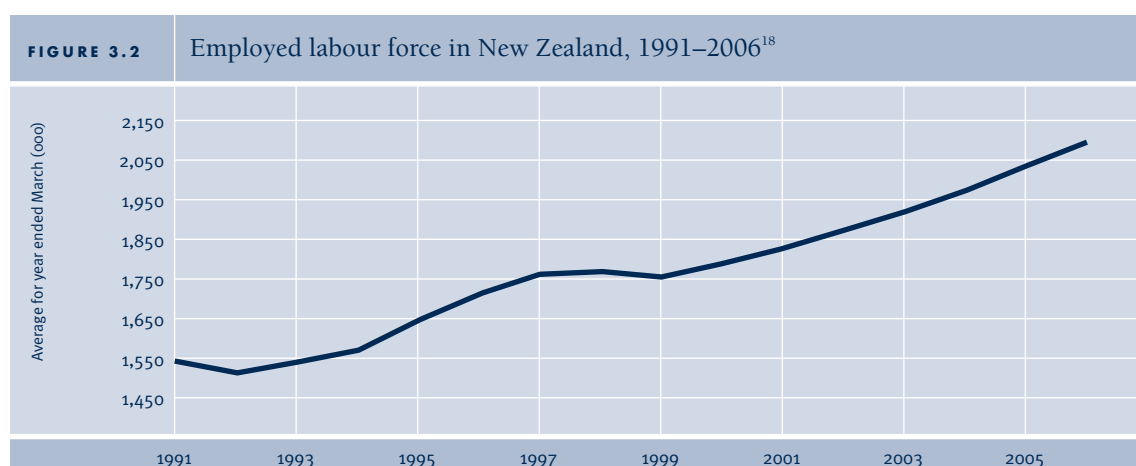
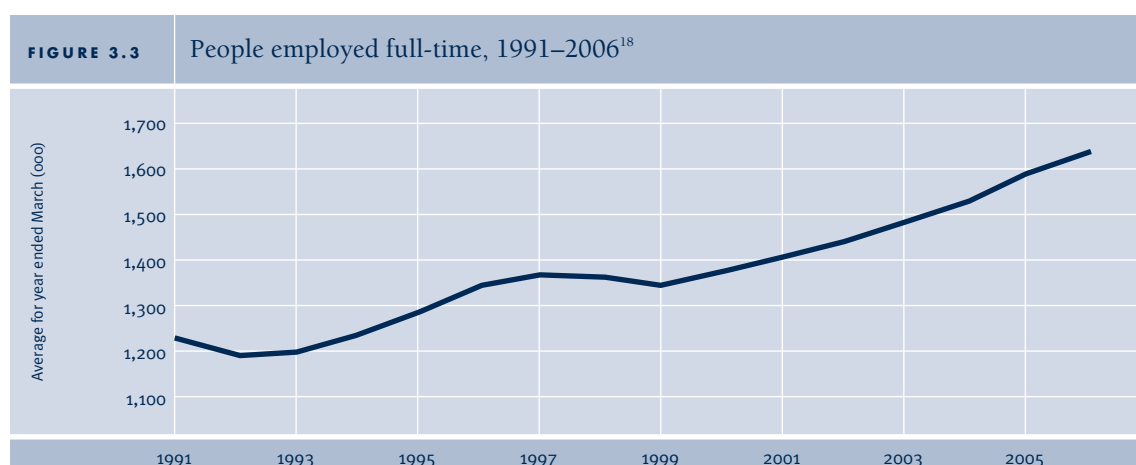


Figure 3.2 shows the extraordinary growth that the New Zealand labour force has undergone in the last 15 years. The number of people employed in New Zealand grew by nearly half a million between 1991 and 2005 – a growth of 29 per cent. In comparison, between 1991 and 2006, the New Zealand working-age population experienced a growth of only 22 per cent.¹⁸ The strong rate of growth of employment has outpaced population growth despite strong immigration and an increase in the overall participation rate of the working-age population. Increases in both employment and the participation rate have also resulted in rapid growth in demand for labour and skills in the New Zealand labour market, resulting in record high skill and labour shortages.¹⁹



The strong growth in labour demand over the last half decade has resulted in more people being drawn into the labour force in both full-time and part-time forms of employment (see Figures 3.3 and 3.4). We are not only seeing an increase in earlier trends in labour force participation (such as the continuing growth in labour force participation of women), but a redrawing of traditional boundaries of the labour market (especially the strong growth of older workers in the paid workforce). Analysis of the Linked Employer-Employee Data (LEED) indicates that the growth in the labour force participation rate is coming primarily from people who were absent from the New Zealand tax system, rather than people moving from being on benefits into the labour force. They attribute this to four groups: young people transitioning into the labour market, older people coming out of retirement, people returning to the labour force after child rearing and people migrating into New Zealand.²⁰



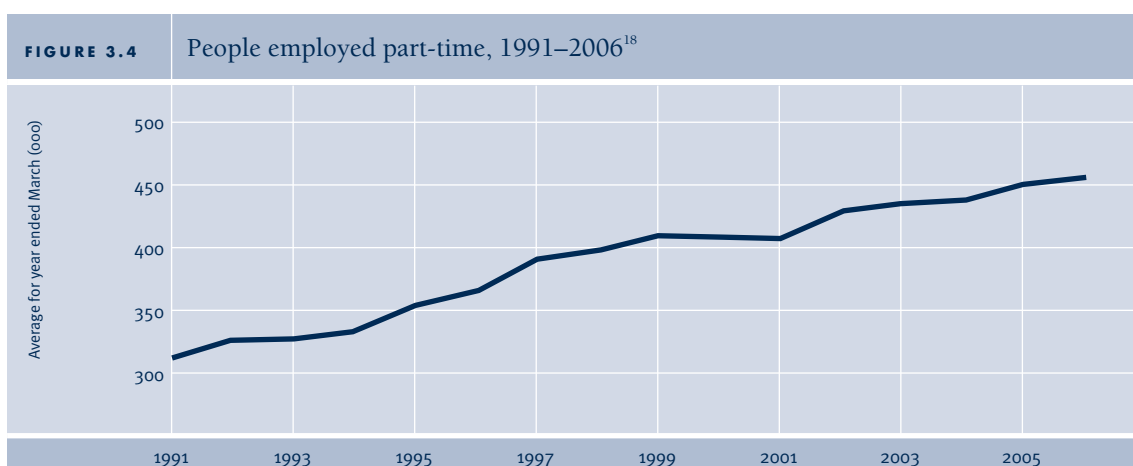


Figure 3.5 represents the growth in labour demand, which has seen unemployment fall to an historical low (as of August 2007, when unemployment was at an unprecedented 3.6 per cent). Quite apart from any other changes in the world of work (and, as the remainder of the report shows, there are many), this historic growth in labour demand and participation rates and the decline in unemployment is an extraordinary development, with implications for future supplies of productive labour and, importantly, for OHS regulation and policy.



New Zealand has also been experiencing important changes in demographic and social patterns, and many of these changes have flowed through to altering the age, gender and ethnic structure of the workforce. These will be discussed in more detail in Chapter 4.

3.1.1 INDUSTRY AND OCCUPATIONAL GROWTH AND DECLINE

A number of sectors have experienced significant growth between 2000 and 2006. The majority of growth has occurred in the service sectors (see Table 3.1). There are two ways of looking at growth: real growth, which is the increase in actual numbers; or proportional growth, which indicates the growth of an industry in proportion to its initial size. The largest growth industries in terms of real growth are wholesale and retail trade (up by 51,100) and health and community services (up by 48,100). In terms of proportional growth, health and community services grew by 35 per cent, while accommodation, cafés and restaurants grew by 31 per cent. It should also be noted that the agriculture, forestry and fishing industry continues to shrink.

TABLE 3.1	Industry distribution by sex, 2000 and 2006 ^{18*}	
	Total (ooo)	
	2000	2006
Agriculture, forestry and fishing	159.5	151.2
Mining	3.7	5.8
Manufacturing	282.0	280.1
Electricity, gas and water supply	8.6	7.6
Construction	114.7	165.7
Wholesale and retail trade	315.4	366.5
Accommodation, cafés and restaurants	76.2	99.9
Transport and storage	72.9	83.9
Communication services	39.5	31.4
Finance and insurance	54.5	69.0
Property and business services	195.0	236.8
Education	128.1	162.8
Health and community services	137.6	185.7
Other services**	192.5	234.2
Not specified	4.5	5.7
Total	1,784.7	2,086.2
* Labour Statistics 2006, from which the data is drawn, presents a limited time series due to changes in industry coding. Hence, this table only presents data from 2000 to 2006, a smaller scope than presented in the rest of the report.		
** This combines government administration and defence, cultural and recreational services, and personal and other services.		

In 2006, the largest occupational groups were professionals, as well as service and sales workers (see Table 3.2). This was a change from 1993, when the largest occupational group was clerks, followed by service and sales workers and legislators, administrators and managers. At the high-skilled end of the labour market, the change in occupational structure is most likely caused by the increase in IT usage leading to a higher demand for skilled workers (professionals) and a decrease in demand for clerks or administrators. At the lower-skilled end of the labour market, the growth in service and sales workers reflects the growth in the service sector and the increase in both full-time and part-time workers in the retail sector.

The highly gendered segregated patterns of skilled and unskilled work seen in 1993 were still apparent in 2006, with men more likely to belong to skilled occupational groups and women to unskilled occupational groups. The dominant occupational groups for men have not changed over time, with trade occupations comprising 192,800 men in 2006 and 136,300 in 1993 (or 15 and 16 per cent, respectively), while legislators, administrators and managers comprised 165,200 men in 2006 and 137,800 in 1993 (or 17 and 16 per cent, respectively). The largest proportional growth for men was, however, in professional occupations (78 per cent growth between 1993 and 2006), followed by service and sales workers (57 per cent growth). In 2006, the dominant occupational groups for women were as service and sales workers (215,400 or 22 per cent), followed by clerks (205,300 or 21 per cent). Like men, the female workforce grew fastest in professional occupations (69 per cent); however, the second fastest growing occupation for women was technicians and associate professionals (67 per cent).

TABLE 3.2		Occupational distribution by sex, 1993 and 2006¹⁸				
	Male (ooo)		Female (ooo)		Total (ooo)	
	1993	2006	1993	2006	1993	2006
Legislators, administrators and managers	137.8	165.2	60.3	97.0	198.2	262.1
Professionals	85.1	151.4	101.9	172.5	187.0	323.9
Technicians and associate professionals	91.3	118.9	77.5	129.6	168.8	248.5
Clerks	47.2	54.1	170.5	205.3	217.7	259.4
Service and sales workers	66.4	104.2	132.4	215.4	198.9	319.6
Agriculture and fishery workers	112.4	106.2	47.8	47.0	160.2	153.2
Trades workers	136.3	192.8	9.7	11.4	145.0	204.3
Plant and machine operators and assemblers	112.3	153.5	36.9	33.5	149.2	187.0
Elementary occupations	62.8	76.6	39.2	47.3	102.0	123.9
Not specified	-	2.2	-	2.1	-	4.3
Total	852.3	1,124.9	676.7	961.3	1,529.1	2,086.2

3.1.2 EXPANSION OF THE SERVICE SECTOR

While the service sector may be considered a relatively safe work environment (when compared to the construction industry, for example), it is important to take note of who works in it and what type of work is done. The expansion of the service sector has resulted in the expansion of part-time work.²¹ We will see later that part-time work can often be detrimental to health and safety in the workplace. Further, the effect of this is primarily on women and young people. (Discussion into the effects of part-time work is undertaken in Chapter 5, and further discussion on women in the workplace is undertaken in Chapter 4.) It seems reasonable to suggest that the combination of a young casualised workforce and weak or absent OHS management will exacerbate risks in what may be generally viewed as not especially dangerous working environments.

3.1.3 INJURY AND DISEASE IN NEW ZEALAND

There are vast statistical data available on workplace injury and disease in New Zealand. Injury data range from reported incidents and types of injuries to the physical and geographic characteristics of injuries. These data allow for detailed analysis of injury data, but there is under-reporting of the contracting of diseases by up to a factor of ten, according to a 2004 NOHSAC report.⁷ Therefore, while some statistics are presented on disease, these should be considered as indicative of general trends rather than of an accurate assessment of the extent to which diseases are contracted due to work. A broad overview of workplace injuries and diseases by industry is presented here, but more detailed information will be examined during later discussion on workforce demographics in Chapter 4.

Sector analysis shows that the highest incidence of injury as a proportion of the total number of workers is in the manufacturing industry (see Table 3.3). We will see later that manufacturing is an industry with multiple risk factors associated with the prevalence of shift work and the dominance of non-standard forms of employment, such as casual and temporary workers, which are risk factors in themselves.

TABLE 3.3		Claims for injuries occurring in the year ended 31 December 2006 ²²				
	Claims by males (ooo)	Claims by females (ooo)	Total claims (ooo)	Percentage of all claims	Full-time equivalents	Incidence rate
Industry						
Agriculture, forestry and fishing	18.1	4.7	22.8	10	129	177
Mining	1.0	0.1	1.0	-	6	165
Manufacturing	35.8	7.8	43.6	19	264	165
Electricity, gas and water supply	0.9	0.1	1.0	-	8	122
Construction	25.7	0.8	26.4	11	174	152
Wholesale trade	6.6	1.9	8.6	4	95	90
Retail trade	10.8	6.0	16.8	7	223	75
Accommodation, cafés and restaurants	2.4	3.4	5.8	2	75	77
Transport and storage	7.7	1.1	8.8	4	76	116
Communication services	1.2	1.1	2.4	1	33	72
Finance and insurance	0.4	0.8	1.2	1	66	19
Property and business services	9.8	5.1	14.9	6	219	68
Government administration and defence	2.3	1.6	3.9	2	84	47
Education	2.2	4.8	7.0	3	139	50
Health and community services	1.5	8.1	9.6	4	161	60
Cultural and recreational services	4.1	1.7	5.8	2	42	136
Personal and other services	4.6	1.9	6.4	3	75	86
Not specified	36.3	12.9	49.2	21	6	-
Total	171.3	63.9	235.2	100	1,873	126

3.2 INTERNATIONAL LITERATURE REVIEW

3.2.1 EMERGING OHS RISKS INTERNATIONALLY

Three reports⁹⁻¹¹ published by the European Agency for Safety and Health at Work (EASHW) note particular emerging risks in the workplace. They address emerging physical, biological and psychosocial risks. This section will present the main findings of these reports, and later analysis will identify how these risks relate to the New Zealand context.

The first report⁹ emphasises multifactorial risk exposures. These frequently include long established ergonomic and other risk factors (for example, plant operation, thermal risk, noise, vibration and so on) in combination with psychological risk factors. The report makes the interesting observation that:

[F]actors such as ‘poor job security’ and ‘fear of the future’ resulting from the unstable labour market accentuate the effect of physical risk factors... ‘Longer working hours’, ‘increased work-pace’ and ‘older working age’ were also singled out as emerging risks that lead to MSD [muscular-skeletal disorders].

To the extent that changes in work organisation and working arrangements contribute to psychosocial factors and the flow-on effects to physical risk, they become directly relevant to the policy debate on emerging occupational health and safety issues.

The second report,¹⁰ on biological risks, identifies female workers as being more susceptible than male workers to infection. There is also an emphasis on a greater risk of infection and serious health effects with decay of the auto-immune system due to ageing. In the New Zealand context, this may be important with increased female participation in, and ageing of, the workforce. Also noteworthy is that industries considered to be of significant risk are prominent in the New Zealand economy, for example, farming, food processing, health and community care. Other industries that place workers at significant risk include solid waste recycling, water and sewage processing, and transportation (for example, dock workers opening containers).

The prevalence of mosquitoes as transmission agents emphasises a linkage with public health responses. Human transmission risk increases the prospect of workplace exposures becoming wider public health risks. (This is evidenced in the Hawke's Bay tuberculosis exposure in 2003.) The report also notes that co-exposures in workplaces may increase risk (for example, agricultural exposure to endotoxins may cause irritations resulting in coughing and therefore transmission of the more serious underlying infection).

The third report,¹¹ on psychosocial factors, is immediately relevant to the New Zealand context. Contemporary worklife is shaped by patterns of globalisation, increased economic liberalisation and the subsequent growth of free trade. Improved technologies have created new fields of work, and we are seeing an increase in the service economy. Strong competition between companies results in non-traditional employment practices such as outsourcing; contract labour hire; casual, seasonal and sessional work; part-time work and flexible work practices. These employment practices can create work intensification, a poor work-life balance and high emotional demands, which can all lead to increased risk of sustaining injury or disease in the workplace.

3.2.2 INTERNATIONAL OHS REGULATION

In relation to OHS regulation/policy, it can be noted that governments and regulators have responded to the challenges posed by changing work arrangements in a generally fragmented and belated fashion. Over the past 15 years, government agencies in Australia, Europe and North America have prepared a number of reports either addressing the issue in general,^{15, 22-25} specific work arrangements such as temporary and labour hire/agency labour or homework,²⁶⁻³⁰ or have raised it as part of reviews of OHS legislation,³¹⁻³² or in the context of reviews of OHS in particular industries like mining or road transport³³⁻³⁴ or with regard to particular groups like younger workers or immigrant/foreign workers.

For their part, inspectorates/agencies have prepared guidance material with regard to some specific work arrangements or undertaken specific workplace health promotion measures that address one or more of the psychosocial risk factors associated with workplace change. For example, a recent review of workplace health promotion programmes and projects in Europe revealed a very fragmented approach.³⁵ Some programmes address issues such as job security, bullying, heavy workload and lack of job control but no single country appeared to address all areas of changing work arrangements, with most addressing only some and others virtually nothing in this regard (see Table 11³⁵).

3.3 KEY INFORMANT INTERVIEWS

A consideration in the context of the demographic changes is the related impact on the capability of regulatory agencies. A number of key informants expressed concern at the ageing of the workforce responsible for regulating occupational safety and health in the New Zealand economy. Additional concern was expressed with the intensification of competition within the labour market. One key informant, a former senior Department of Labour inspector currently working in the private sector, suggested that the skill base of the Department was being depleted and that there was difficulty in attracting and retaining suitably qualified and experienced personnel. Several other commentators suggested that this dynamic was a key driver for change in the regulatory regime for occupational safety and health in New Zealand.

The majority of the informants expressed concern that the profile of New Zealand industry presented particular issues. Of particular concern was the exposure to an increasingly complex array of biological hazards. Again, the views here accord strongly with those expressed by the European Agency. Informants identified that, in this area, there was need for acuity in linkages between occupational health and safety and public and environmental health concerns. They were mindful that the diversity of working arrangements in the economy, especially in the agricultural and transport sectors, made this set of issues more complex. Their only shared conclusion was the emphasis this placed on enhanced educational efforts and surveillance arrangements. In the same breath, they restated concern with the fall-off of training efforts and the practical difficulties of surveillance of health-related exposures across multiple and serial workplaces for an increasing proportion of the workforce.

SECTION FOUR

CHANGING DEMOGRAPHICS OF THE WORKFORCE AND

CONSEQUENCES FOR OHS



The previous chapter provided an overview of key developments and changes in the New Zealand labour market over the past decade. This chapter provides a more detailed look at workplace level trends, focusing particularly on demographic trends and their immediate and explicit impacts on OHS. Three demographic categories will be examined: gender, ethnicity and age. The New Zealand population has undergone substantial changes with regard to gender, ethnicity and age in recent years, and these changes have extended into the labour market. As a consequence, OHS policy and research can benefit from a more direct focus on the interactive effect between these demographic characteristics and workplace injury and disease.

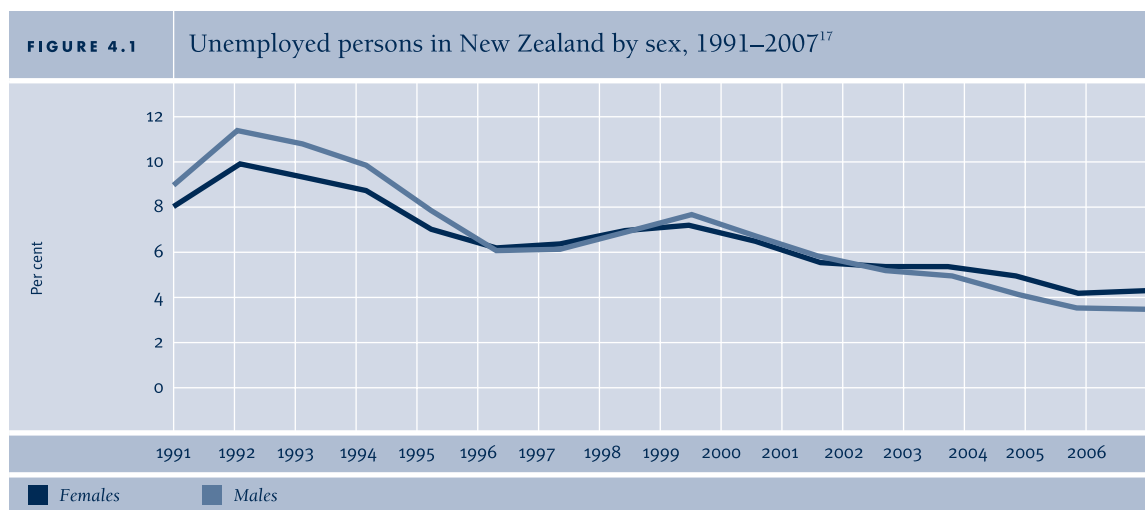
Assessing work patterns by gender, ethnicity and age allows for more robust analysis in later chapters. While this chapter will not provide a detailed discussion of the implications of the changing demographics of the workforce, it will outline the consequences of particular patterns of labour force trends for each of these three main demographic characteristics. Examining the labour force trends will provide the background for further analysis in later chapters regarding changes in types of work, job structure and workforce representation.

4.1 TRENDS IN GENDER PATTERNS

The labour force participation rate for men in 2006 was 75.2 per cent and remains relatively unchanged since 1991. By contrast, the labour force participation rate for women has steadily increased over the past 15 years, from 54.4 per cent in 1991 to 61.3 per cent in 2006.¹⁸ The increase in female employment has mostly occurred in the service sector and in occupations employing high- and semi-skilled labour.

4.1.1 GENDER AND EMPLOYMENT AND UNEMPLOYMENT CHARACTERISTICS

Figure 4.1 shows the unemployment rate by sex. While the unemployment rate was lower for women than men in the early 1990s, the reverse has been true since 2002. Women's higher levels of unemployment relative to men, however, may reflect the increased participation rate of women and a return to the labour force of women who may have been out of work for some time. Nevertheless, the unemployment rate for both men and women has also steadily trended downwards since 2001. The decline in unemployment rates mirrors an international trend in western countries for a decrease in unemployment for both men and women.



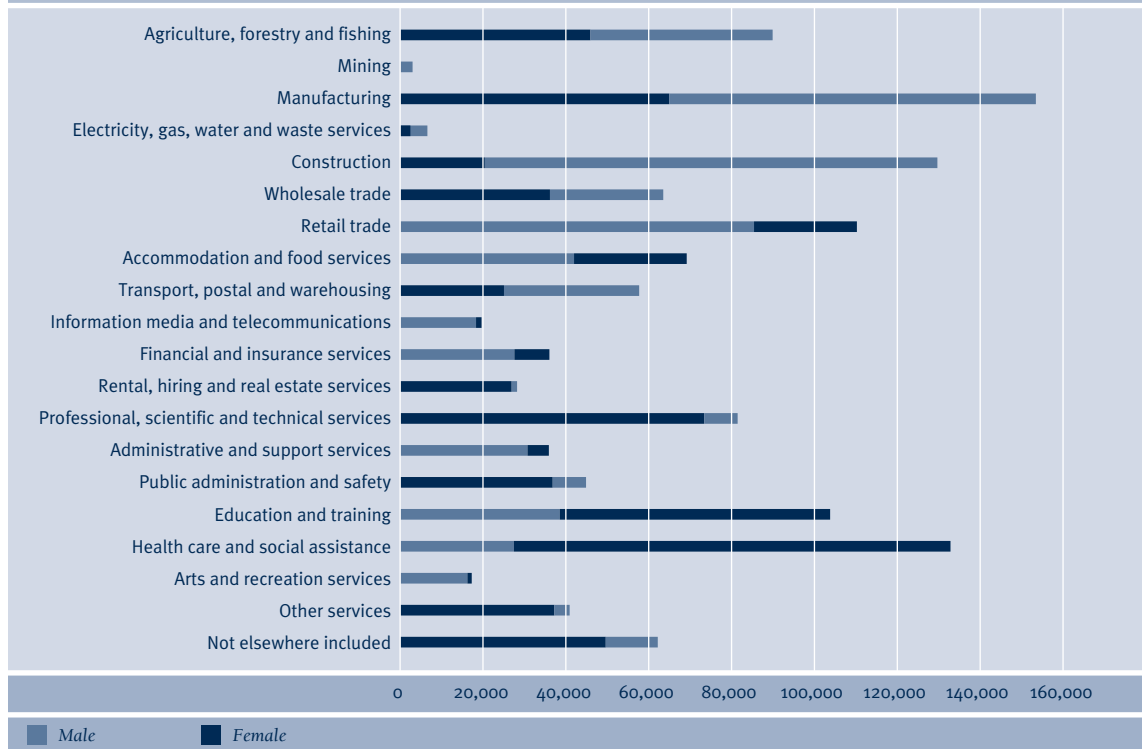
The relative proportions of both sexes working in part- and full-time employment has remained steady over the past ten years. The one exception to this has been an increase in full-time female employment in the 25–39 age group.³⁶ One possible explanation for this is the trend for women to delay child rearing and stay in the workforce longer. Additionally, the need to maintain an adequate family income (particularly for single parent families) may have had an impact, even with the introduction of paid parental leave in July 2002. Table 4.1 provides a summary of some important labour market outcomes for women over the period 2001–2006. Of particular note is the growth in female labour force participation that has been concentrated in service sector employment and in occupations employing high-skilled and semi-skilled labour.

TABLE 4.1		Female labour market outcomes, December 2001–2006¹⁷			
	2001	2006	2001–2006 change	2001–2006 change	2001–2006 male change
Labour force status	(000)	(000)	(000)	%	%
Employed	859.0	958.0	109.0	12.7	12.5
Unemployed	49.0	40.0	-9.0	-18.4	-25.9
Labour force	905.0	1005.0	100.0	11.1	10.7
Not in the labour force	630.0	653.0	23.0	3.7	4.1
Working-age population	1538.0	1661.0	123.0	5.0	9.0
Proportional measures	%	%		%	%
Employment rate	55.9	50.3		2.4	2.4
Labour force participation rate	59.0	60.7		1.7	1.2
Unemployment rate	5.4	3.9		-1.5	-1.8
Industry employment	(000)	(000)	(000)	%	%
Primary	56.2	51.4	-4.5	-5.5	-6.1
Manufacturing (and utilities)	54.4	74.0	10.4	-1.3	-6.0
Construction	13.7	24.1	10.4	75.9	61.8
Trade and accommodation	205.2	244.6	36.4	17.5	11.0
Other services	102.9	124.5	21.6	21.0	7.1
Personal services	399.9	456.9	57.0	14.3	21.2
Skill employment	(000)	(000)	(000)	%	%
High-skilled occupations	237.3	259.9	52.6	22.2	21.6
Skilled occupations	143.5	150.8	7.0	4.9	19.2
Semi-skilled occupations	442.1	454.2	42.1	9.5	4.4
Low-skilled occupations	43.2	49.3	6.1	14.1	-0.1
<i>Note: Figures may not sum to total due to rounding.</i>					

4.1.2 GENDER AND INDUSTRY

Traditional gender roles still dictate the distribution of both sexes in the workforce. Men continue to work in more physical industries, and women continue to work in care-based and service-based industries. The largest proportion of male employees work in manufacturing (153,000 or 15 per cent of male workers), followed by construction (129,000 or 12 per cent of male workers). The majority of women work in healthcare and social assistance (132,000 or 14 per cent), retail trade (110,000 or 12 per cent) and education and training (102,000 or 10 per cent).

FIGURE 4.2 Industry by sex, 2006³⁶



There has, however, been rapid growth in various white collar occupations over the last 10 years for both sexes. In professional occupations, there has been a 57 per cent growth for men and a 46 per cent growth for women. Sales and service work is one of the fastest growing occupations for men, with a 30 per cent growth over the last 10 years.

4.1.3 GENDER AND OCCUPATION

As in the industrial structure of work in New Zealand, there are clear gender differences with regard to occupation. Dominant male occupations are trades (17 per cent), legislative, administrative or managerial roles (15 per cent), plant and machine operator or assembly roles (14 per cent) and professional roles (14 per cent). Dominant female occupations are sales and service workers (22 per cent), clerks (21 per cent), professionals (18 per cent) and technicians and associate professionals (14 per cent).

While men still make up the larger proportion of those working in managerial, technical and associate professional positions, these occupations are growing at a faster rate for women than for men. Occupations that are declining for women include plant and machinery operational or assembly work and trades work. For men, the main declining occupation is agricultural and fishery work.

4.2 TRENDS IN ETHNIC LABOUR PATTERNS

4.2.1 ETHNICITY AND EMPLOYMENT CHARACTERISTICS

Table 4.2 disaggregates labour force participation rates by sex and ethnicity. It shows that disparities between females of different ethnic origins have generally declined over the past five years, although it is also clear that differences in outcomes have not disappeared altogether. Further, this has occurred while participation rates have risen across various ethnic groups, and unemployment rates have declined. Of particular note is the extent to which the unemployment rate has declined more rapidly for Māori and Pacific peoples than for Europeans.

TABLE 4.2		Labour market outcomes by sex and ethnicity, December 2001–2006 ¹⁷				
	Female % 2001	Female % 2006	2001–2006 female % change	Male % 2001	Male % 2006	2001–2006 male % change
European						
Labour force participation rate	60.4	62.8	2.4	75.3	76.7	1.4
Unemployment rate	3.9	2.9	-1.0	3.9	2.6	-1.3
Māori						
Labour force participation rate	55.6	60.4	4.8	73.7	74.8	1.1
Unemployment rate	12.7	8.7	-4.0	11.9	7.3	-4.3
Pacific peoples						
Labour force participation rate	51.3	55.2	3.9	71.2	69.7	-1.4
Unemployment rate	8.1	6.5	-1.6	10.8	6.3	-4.5
Other*						
Labour force participation rate	48.5	56.6	5.1	64.3	71.5	7.2
Unemployment rate	8.3	6.8	-1.6	9.1	5.8	-3.1

* The 'Other' ethnic group includes people who do not identify as European, Māori or Pacific peoples.

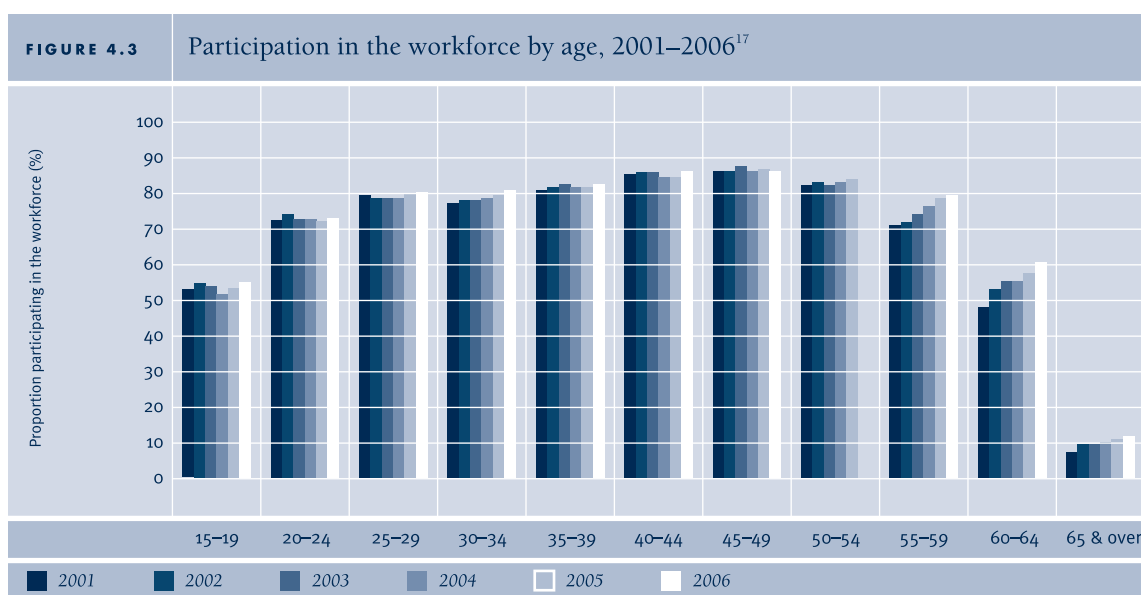
The trends of strong job growth have translated both geographically and across ethnicity. While not entirely erasing historic disparities of region or ethnicity, job growth has seen unemployment fall in almost all regions and across all ethnic groups. While there is still a significant difference between unemployment rates for Māori (over 7.5 per cent) and Pacific peoples (7.0 per cent) compared to Europeans (2.7 per cent), the disparity has narrowed significantly in absolute terms from levels above 25 per cent in the early 1990s.

TABLE 4.3	Snapshot of Māori labour market outcomes, 2002 and 2007¹⁷				
	2002	2007	2002–2007 change	2002–2007 change	2002–2007 all ethnic groups change
Labour force status	(000)	(000)	(000)	%	%
Employed	174.7	204.9	30.2	17.3	13.3
Unemployed	23.2	16.9	-6.3	-27.1	-20.5
Labour force	197.9	221.7	23.9	12.1	11.5
Working-age population	301.7	328.2	26.6	8.8	8.4
Proportional measures	%	%		%	%
Employment rate	57.9	62.4		4.5	2.8
Labour force participation rate	65.5	67.6		2.0	1.9
Unemployment rate	11.7	7.6		-4.1	-1.5
Industry employment	(000)	(000)	(000)	%	%
Primary	17.4	16.9	-0.6	-3.2	-6.1
Manufacturing (and utilities)	33.7	33.8	0.1	0.3	-7.6
Construction	11.4	20.9	9.6	84.8	62.6
Trade and accommodation	34.6	40.2	5.6	16.2	13.1
Other services	26.5	33.0	6.5	24.4	18.2
Personal services	49.9	57.8	7.9	15.8	16.4
Skill employment	(000)	(000)	(000)	%	%
Higher-skilled occupations	30.0	35.3	5.3	17.5	22.2
Skilled occupations	30.7	40.2	9.5	30.8	17.2
Semi-skilled occupations	91.9	105.9	14.1	15.3	6.9
Low-skilled occupations	21.8	22.4	0.6	2.6	0.9
<i>Note: Figures may not sum to total due to rounding.</i>					

4.3 TRENDS IN AGE PATTERNS

The growth in New Zealand labour demand has seen increased labour force participation across almost all age categories (see Figure 4.3). The only age group that has not seen an increase in participation between 1996 and 2006 is 20 to 24 year olds. This may be explained, at least in part, by increased participation rates in education amongst this age group. Nevertheless, the much higher incidence of injury amongst younger male workers (aged 15 to 24) compared to male workers aged between 25 and 54 (22 per 1,000 FTE compared to an average of 20 for the other age groups) needs to be considered.

At the other end of the age spectrum, the increasing rate of participation amongst older workers (over the age of 55) has significant implications for OHS. Older male workers, in particular, have alarmingly high rates of work-related injury compared to younger men. Men aged 55 to 64 have an injury rate of 23 per 1,000 FTE, whilst male workers older than 65 have an injury rate of 59.



4.3.1 YOUNG WORKERS

Young workers are defined as those aged between 15 and 24. In New Zealand, young workers have experienced a significant growth in employment in the last 20 years, and young New Zealand workers now have one of the lowest unemployment rates (8th lowest) and highest participation rates (7th highest) of workers in the OECD.³⁷ This growth has been accompanied by an increase in the average received wage.

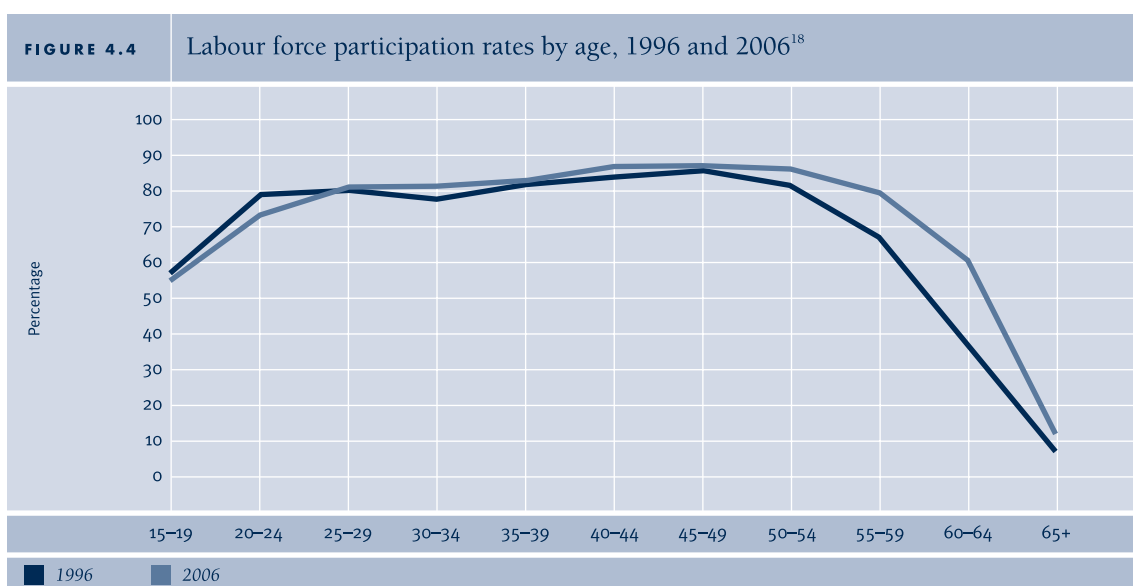
The key areas of growth in youth labour have been in the construction, trades and accommodation industries, as well as personal services (see Table 4.4). In terms of skill levels of youth work, almost the entire growth has been in skilled and semi-skilled occupations, suggesting a growth in apprenticeships, particularly in the trade-related occupations. There remain, however, significant, and to some extent stubborn, disparities in youth labour market outcomes by ethnicity.

TABLE 4.4	Youth labour market outcomes, June 2001 and 2006¹⁷				
	2001	2006	2001–2006 change	2001–2006 change	2001–2006 male change
Labour force status	(000)	(000)	(000)	%	%
Employed	305.6	352.3	46.8	15.3	13.3
Unemployed	39.2	39.3	0.1	0.3	-20.5
Labour force	344.7	391.7	46.9	13.6	11.5
Not in the labour force	193.4	212.1	18.7	9.7	2.3
Working-age population	535.1	403.7	65.6	12.2	6.4
Proportional measures	%	%		%	%
Employment rate	56.8	58.4		1.6	2.8
Labour force participation rate	64.1	64.9		0.8	1.9
Unemployment rate	11.4	10.0		-1.3	-1.5
Industry employment	(000)	(000)	(000)	%	%
Primary	23.5	22.1	-1.5	-5.2	-5.3
Manufacturing (and utilities)	41.6	36.9	-4.7	-11.4	-6.4
Construction	15.8	34.9	19.1	120.4	62.6
Trade and accommodation	127.8	144.0	16.2	12.7	13.1
Other services	50.6	53.9	3.2	6.4	13.8
Personal services	45.7	59.0	13.2	20.9	22.0
Skill employment	(000)	(000)	(000)	%	%
High-skilled occupations	30.5	33.0	2.5	5.2	22.2
Skilled occupations	56.7	74.5	17.9	31.6	17.2
Semi-skilled occupations	105.1	213.1	27.0	14.5	6.9
Low-skilled occupations	31.7	30.1	-1.7	-5.3	0.9
<i>Note: Figures may not sum to total due to rounding.</i>					

4.3.2 OLDER WORKERS

The increasing proportion of the population in older age brackets, combined with the general improvement in the health status of older people and changes in retirement income benefits, has resulted in a larger amount of older people available to participate in paid work. For instance, policy changes such as the abolition of compulsory retirement and the raising of the eligibility of superannuation to 65 have contributed to a gradual increase in older workers (especially in the 55–65 age bracket).

Examining participation rates by age shows some substantial changes over the last 10 years for older workers, reflecting, amongst other things, the propensity for these workers to delay retirement. The huge increase in participation rates for older workers is reflected in Figure 4.4.



The Department of Labour cites a number of reasons for such a rapid growth in older workers. They include:

- raising the age of eligibility for New Zealand Superannuation from 60 to 65
- banning compulsory retirement in 1999
- reducing the superannuation surcharge on extra income earned in retirement in 1997 (for the 65 plus group only)
- the Human Rights Act 1993 making age-based discrimination illegal
- better health and the recognition among older people (especially ageing baby boomers) of the benefits around keeping active
- technological change reducing the manual intensity of some work
- ongoing skill shortages increasing older workers' bargaining power.³⁸

Growth in the proportion of older workers has been especially strong in government, accommodation and community services (approximately 70 per cent), as well as finance and business services (approximately 68 per cent). Growth in the proportion of older workers in both the primary and manufacturing sectors is set against slight declines in total employment in these industries. Partly as a result, some occupations in the primary sector, such as cattle farming, now have the oldest age profiles among occupational groups. Given the known occupational health and safety risks in farming activities, this age profile poses challenges for both farm practices and safety prevention and regulation.

4.4 KEY INFORMANT INTERVIEWS

4.4.1 OBESITY

Several key informants noted that the prevalence of obesity in New Zealand is increasing. The EASHW comments on obesity as a significant concern for occupational health and safety with regard to physical injury. The 2005 report⁹ observes that the increasing incidence of obesity may lead to increased incidence of a variety of muscular-skeletal injuries. There may also be a re-emergence of injury states that have been addressed in the past through ergonomic design of workplaces. Past solutions are cited as no guarantee for the future, as the physical condition of employees changes.

4.4.2 AGEING WORKFORCE

In interviews, several key informants confirmed the contradictory impacts of the ageing workforce on occupational health and safety. In tight labour market conditions, it was suggested that older workers were increasingly being valued for their experience, and this would contribute to the trend for workers to continue to work for longer. This might potentially escalate the risk of manual handling injuries while, on the other hand, the increased experience and caution of the older worker may off-set risk.

Key informants in interviews cited concerns with the position of young workers, given their increased exposure to precarious forms of employment. Primary among the cited concerns was the perceived drop of training effort in the types of employment to which young workers were increasingly exposed.

Age-related factors related to training were also informant concerns. There is a view that there has been a decline in the health and safety content of training for young people entering the labour market, although there is no evidence of a directly related increase in injury as a result. Similarly, it was noted that, in the face of an older workforce, there is a need to address issues related to the renewal of skills at all ages.

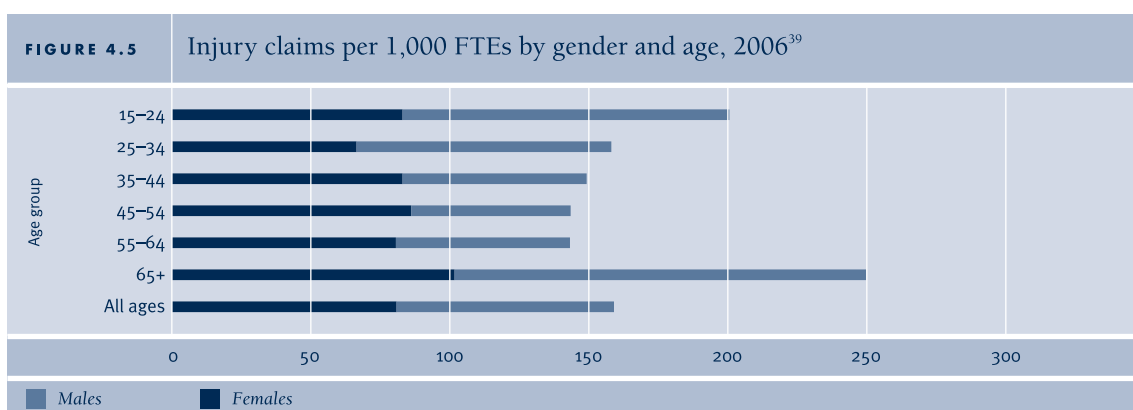
4.5 IMPLICATIONS FOR EXISTING AND EMERGING OHS RISKS

4.5.1 GENDER

Regardless of the changing demographics of gender in the workplace, the incidence of male injury remains consistently higher than the incidence of female injury. In 2007, 73 per cent of all reported workplace injury claims were made by men. According to the Department of Labour, this figure has remained constant for the previous five years. The rate of reported disease is also continually four to nine times higher for males than females in any given year.³⁹ The reasons and possible research and regulatory responses for this will be discussed in later chapters on working hours, non-standard and precarious work, impacts of technology, changing job structure and changes in workforce representation.

The EASHW report⁹ suggests that there may be a heightened risk of some forms of cancer (uterine/cervical) for women engaged in sedentary work. However, the conclusions were tentative, and the evidence seems inconclusive at this point. Nonetheless, monitoring of the evidence in this area seems worthwhile.

Men in the oldest age bracket (65 and older) and the youngest age bracket (15 to 24) have the highest incidence of work-related injuries compared to men in all other age brackets (see Figure 4.5). In contrast, the incidence of injury amongst women is fairly consistent and relatively low across all age groups. Like men, however, the incidence of injury for women aged 65 and over is slightly higher than for other age groups.



4.5.2 ETHNICITY

Europeans have a lower incidence rate of injury than other ethnic groups, and this has been the case since 2002 (see Table 4.5). Of the ethnic groups, Māori workers have the highest rate of injury (27 per 1,000 FTEs compared to a labour market average of 17 per 1,000 FTEs). The industries that Māori and Pacific peoples work in, as well as the often precarious nature of their work, is the most likely cause of the higher rate of injury (Chapter 5 discusses this further).

TABLE 4.5	Number of injury claims by ethnic group per 1,000 FTEs, 2002–2006 ⁴⁰				
	2002	2003	2004	2005	2006
European	133	130	125	121	114
Māori	182	181	191	185	165
Pacific peoples	135	151	153	160	149
Asian and other	109	111	115	116	133

The 84.8 per cent increase in Māori employment in the construction industry between 2002 and 2007 has consequences for their risk of injury and disease, as the work is predominantly manual labour. Manual handling risks may also be high in trades-based industries and in personal services through occupations related to security guards and personal carers. Further, though the strongest growth for Māori is in skilled occupations, just over half (52 per cent) of all Māori workers (105,900) still work in semi-skilled occupations.

4.5.3 AGE

There is a need to consider the intersection between age and changing employment arrangements. Evidence suggests there is also a critical age bifurcation in the labour market,⁴¹ with young workers (i.e. those under 25 years of age) making up a disproportionate share of those holding temporary jobs, and this has continued to match the growth in this type of employment. At the other extreme, older workers (those of 55 years or more) are disproportionately represented amongst some categories of self-employment although older workers are also to be increasingly found in temporary jobs. The age bifurcation in terms of precarious employment means that both young and older workers are disproportionately exposed to the additional health risks associated with these employment arrangements (and the more limited avenues for articulating their concerns).

The academic and regulatory literature on labour market changes in terms of ageing workers establishes that changing age demographics pose new risks for injury and disease in the workplace. “Ageing workers are more vulnerable to poor working conditions than young workers. Additionally, the failure in providing workers with lifelong learning opportunities increased the mental and emotional demands upon them, which may affect their health and increase the probability of work-related accidents.”⁴² Available research also shows that ageing is not necessarily a uniform or linear process in terms of functional decline. Some functions or skills may actually begin, or continue, to develop. The process of ‘ageing’ is affected by a number of factors, such as physical activity, so that when we talk about aspects of ageing, we are not necessarily able to generalise for all those in an age cohort. Thus, general conclusions about the risks posed by an ageing workforce are difficult to draw.

Young people make up a large proportion of employees in industries that are dominated by temporary, part-time and casual employment arrangements or that offer training and apprenticeship opportunities. Across the New Zealand workforce, only 15 per cent of all male employees and 16 per cent of all female employees are aged between 15 and 24. In contrast, industries with a high proportion of young people include work in private households (44 per cent), food retailing (42 per cent) and accommodation, cafés and restaurants (35 per cent).³⁶ The risk to young people working in these industries with high levels of temporary, part-time and casual employment is that there is less likelihood of receiving adequate training in order for them to engage in safe working practices and less support for other preventative OHS practices. Young workers, particularly those in casual or seasonal work, may be further disadvantaged with regard to health and safety through a weaker bargaining position brought about by precarious forms of employment. Further discussion of propensity of health and safety risk for these types of workers is explored in Chapter 6.

Further, international evidence suggests that, for young people, there are grounds for concern about the developmental risks associated with work in some occupations; the emotional and informational asymmetry that may confront workers in some workplaces; the pattern of injury and harm to younger workers, such as the predominance in family and small business; or the expectation that young workers perform tasks for which they have not received adequate training.⁴³

Reviews of research indicate that the injury and disease risks (such as respiratory and skin disorders, and drug and alcohol abuse) amongst younger workers reflect the occupations and industries they are concentrated in (such as agriculture, retailing, hospitality and entertainment) – at least in developed countries – and that many are undergoing training/apprenticeship or have limited job tenure.^{44–45} However, with some exceptions,^{46–47} less attention has been given to how precarious employment or job insecurity has exacerbated the disorganisation associated with job churning (as younger workers move through a succession of jobs) and undermined induction/training, supervision/OHS management and regulatory regimes. As noted elsewhere in this report, the greater the level of volatility in the labour market and resulting complex individual job histories, the greater the difficulty in undertaking surveillance of exposure to harmful substances.

While part-time or temporary work and self-employment may be seen to assist older workers to extend their working careers or the transition to retirement, there is no compelling evidence that this is the norm or that flexible work arrangements have been designed to achieve this outcome. One general consequence of an increase in flexible work is shortened job tenure. While the inexperience of younger workers has been seen to expose them to particular risk, a recent Canadian study found short job tenure was a risk factor for all workers and was actually highest for older workers.⁴⁸ Further, the growth of multiple job holding amongst part-time and temporary workers can suggest a mismatch (where a second job is used to off-set inadequate income in one job) rather than an accommodation. Older workers holding insecure or temporary jobs may experience immediate financial stress due to family and other commitments⁴⁹ and will find it difficult to plan/budget for their retirement. Poorer health and discriminatory attitudes are liable to inhibit prospects of older workers obtaining work in a labour market more dominated by short-term engagements. As a recent Swedish study⁵⁰ notes, perceived employability can impact on

subsequent health. In a labour market characterised by short job tenure, perceived employability will assume greater importance, and while this will not be an issue for all older workers, for others it will be. The study argues that one policy for organisations to improve employability would be through education, but, as noted elsewhere in this report, the shift to flexible work appears to have made such investments in vocational training actually less likely.

Clearly, existing risk factors such as physical injury from poor ergonomic design, poor work organisation and work/technology interfaces will be exacerbated by growing proportions of the workforce in older age categories. Research on ageing and OHS risk is, however, suggesting that, as the expectation of prolonged working life is becoming standardised, it is important to be careful about the ‘dosage’ exposures of workers across their working life to physical, biological and psychosocial risks.

There is a growing recognition that an ageing workforce has profound implications for health, especially when changes in work processes such as work intensification and the failure to modify work performance and design to take account of age are considered.⁵¹ Even within the same job, tacit differences in role and experience may mean that older workers experience greater emotional and mental demands.⁵² However, with some exceptions,^{51, 53} limited consideration has been given to the combined effect of workforce ageing and changes in employment conditions later identified in this report, notably the growth of precarious and informal employment. Nonetheless, there is reason to believe these effects are likely to be profound.

4.6 RESEARCH AND SURVEILLANCE NEEDS

4.6.1 CHANGING GENDER COMPOSITION OF THE WORKFORCE

Taking a gender neutral approach to OHS policy is not widely recommended. The European Institute of Women’s Health makes a particular point that women’s and men’s experiences and physiological make-up are different.⁵⁴ Others have pointed to gender biases in research and the production of information with regard to OHS. Classic occupational epidemiology has paid limited attention to gender issues, identifying gaps in knowledge of work-related gender inequalities in health and making recommendations as to how these might be addressed.⁵⁵

The rates of, and injuries sustained by, men and women vary in both cause and mechanism. Although this could, in part, be reflective of the gendered patterns of employment across industries, occupations, employment conditions and patterns of work, there may also be biological and psychosocial explanations for this. Again, this is an area of OHS investigation that is poorly researched or understood. Research into downsizing/job insecurity has identified a number of gender differences⁵⁶⁻⁶⁷ that appear to reflect, in part, different non-paid work roles (notably those in the family), and similar gender differences have also been noted in post-injury responses.⁵⁸ The implications of women’s concentration in particular types of work that are growing, such as temporary work, remote/telework and home-based work, also need to be recognised. Several studies have pointed to a higher incidence of sexual harassment or occupational violence amongst home-based workers,⁵⁹⁻⁶⁰ and there appear to be some parallels with the female-dominated and expanding homecare industry.⁶¹ A recent survey of 1,100 Victorian workers found that unwanted sexual advances were strongly associated with three types of work arrangement – full-time casual/temporary workers, fixed-term contract workers and self-employed workers.⁶² Moving more workers into the home (for part or all of their working activities), into remote/temporary locations (such as short-term call centres), or into homecare settings has implications for injury and disease surveillance because such activities are often not incorporated into labour force statistics or existing surveillance activities. (One study describes an initiative with regard to homecare workers in the USA.⁶³) More generally, the question as

to whether precarious employment has different implications for women and men needs to be considered.⁶⁴ In short, the combination of shifting gender-based patterns of employment and other gender-related effects with changing patterns of work requires further investigation.

Further research is also needed into the relationship between gender and reporting injury and illness in the workplace. The large discrepancy in the reported rates of workplace disease and injury between men and women may be related to women being less inclined to report workplace-caused illnesses. Many female-dominated occupations, particularly those that are low-wage and where low-skilled women have weaker bargaining positions, are less unionised and have more precarious forms of employment. Fear of loss of employment, or a downgrade in hours, is a very real barrier to reporting OHS concerns or injury. Whilst empirically quantifying under-reporting is fraught with methodological difficulties, anecdotal evidence suggests the need for specific gender-based research in relation to OHS risks and reporting.

From a policy perspective, it should be noted that there is an often complex and even potentially inconsistent relationship between laws regulating OHS, gender discrimination and sexual harassment. (One study provides an illustrative case involving lead exposure.⁵⁸) A clear set of policies is needed to resolve any potential problems.⁶⁵

4.6.2 ETHNIC WORKERS

Ethnicity can interact with OHS in complex ways. In societies subject to European settlement/invasion, indigenous workers may be concentrated in particular jobs or experience specific vulnerability. Foreign-born workers are themselves a diverse group and an increasingly important component of the labour market in many developed (and some developing) countries. They include permanent migrants from a range of backgrounds (or Australians and New Zealanders able to move between the two countries on a permanent or temporary basis), refugees (or those who have arrived and applied for refugee status), illegal or undocumented workers (including those overstaying a visitor's visa) and a range of temporary resident foreign workers. Both the latter two groups appear to be growing in most developed countries. Foreign temporary residents are an increasingly important component of the workforce of developed countries in Western Europe, North America, Australia, New Zealand and elsewhere. In English speaking countries like Australia, the USA, Canada, the UK and New Zealand, temporary foreign workers include backpacker tourists (whether or not they have work permits), foreign students undertaking a programme of study (some of whom subsequently apply for residence) and temporary or guestworkers (including foreign-born workers on short-term contracts and workers from Pacific Island states issued with visas as part of the pilot seasonal worker programme). The groups just identified often tend to concentrate in different segments of the labour market (although there is considerable overlap with regard to those possessing little vocational training or skill), and illegal immigrants and temporary guestworkers may not possess the same legal entitlements under employment laws or be able to access as easily those rights they do possess. Elaborate networks of 'middlemen', labour gangers, migration agents and ethnic businesses specialising in the exploitation of fellow countrymen may construct a reality very different from the formal rights and entitlements these workers may appear to possess.⁶⁶

The introduction of immigrant or guestworkers can pose additional, though usually manageable (through screening), public health risks where there are higher incidences of particular diseases within particular populations, including communicable diseases that have been all but eradicated in host societies, like tuberculosis, or are lower incidence, such as AIDS. The process can also work the other way, with diseases being transmitted back to the sending society.⁶⁷

As with gender, there are complex interplays between ethnicity and precarious employment. Unfortunately, like studies of gender and age, much research on immigrant/foreign workers and those from ethnic subgroups (such

as indigenous, Māori or aboriginal workers) does not consider the effects of employment status in sufficient detail. There are some notable exceptions where researchers have tried to examine all three aspects in terms of better understanding OHS, including Siefert and Messing's study of female and predominantly immigrant hotel cleaners in Quebec,⁶⁸ and Quandt's study of predominantly African-American and Latino female poultry workers in the USA.⁶⁹

In a number of countries, there are known to be concentrations of immigrant workers in contingent work arrangements or industries where such practices are widespread (such as construction work in the USA and parts of Europe), but broader statistics on employment by ethnicity are lacking, and as already noted, many studies ignore this connection. For example, a number of studies have examined injury rates, including fatalities, amongst immigrant minority workers in industries like construction for men⁷⁰ or light manufacturing/food processing for women.⁶⁹ A number of studies identify particular problem areas that may be linked to both contingent work and the vulnerability of particular immigrant or minority groups within an industry. A study of health and safety training amongst young Latino construction workers in the USA⁷¹ found that, while a number of workers performed hazardous tasks, the training was inadequate, especially for those with a low level of English communication skills. At the same time, the role of poor language skills should not be exaggerated to the exclusion of other factors such as poor training, induction and supervision, or disorganised high pressure work-settings with limited union input and widespread regulatory non-compliance.⁷² Some population-based studies have also found foreign-born workers at greater risk of injury,⁷³ but these studies, while not without value, provide even fewer insights into causal factors.

Migrant or ethnic minority group status may exacerbate the vulnerability of workers already in vulnerable jobs with little, if any, union representation and where non-compliance with OHS and workers' compensation regulations is common, if not the norm. However, there may also be a need to identify particular subgroups as especially vulnerable to exploitation, or who are unable and/or unwilling to report safety problems or to access their rights and entitlements. These include illegal immigrants, foreign-born temporary residents working contrary to their visas (because they prohibit paid work altogether or limit the hours or occupation where engagements can occur) or guestworkers who require ongoing employer sponsorship to remain in the country. There is evidence these workers do encounter particular difficulties.⁷⁴

4.6.3 WORKFORCE AGEING

There is now an emerging consensus that the role of maintaining an older workforce cohort will pose new challenges for health and safety at work. Developing strategies to appropriately meet this challenge will depend partly on the occupations and industries in which older age cohorts enter, or re-enter, the workforce and the specific challenges each individual faces. In their analysis of workplace risks faced by ageing workers,¹¹ EASHW points out the complexities of making generalisations about the ageing workforce. While aged workers may face a decrease in some abilities, such as muscle strength, hearing and responsiveness, they also increase their experience, sense of responsibility and competency to judge. Further, research on the relationship between age and occupational accidents has not resulted in consistent conclusions.¹¹ Clearly the interaction between different roles, job functions, occupation and industry is complex when trying to understand cause and effect for injury and disease outcomes. These dynamics were confirmed as matters of concern within the New Zealand labour market by several key informants interviewed in the course of research.

Given that existing research is still inconclusive about the relationship between age and workplace injury and disease, an immediate research need, therefore, is to continue to track the age profile of the labour force. A further avenue for research is a better understanding of the relationship between ageing, and injury and disease at work.

This work needs to be supplemented by a better understanding of the groups of older workers most at risk, in terms of industries and occupations (and even at the workplace level).

There is a widely held view that there is a need for a general policy focus on the promotion of safe and healthy workplaces. As EASHW concludes, “[t]he prevention of harm to ageing workers is best achieved when health and safety policies and practices are applied holistically, particularly in the integration of occupational safety and human resources policies” (page 72).¹¹

Flaspoler argues that “measures of OSH are not yet sufficiently adapted to the needs of older workers but it is critical to take them into consideration... This aim can for instance be reached by means of widespread workplace health promotion, enhanced investment in injury prevention, ergonomic solutions to prevent workers from physical disabilities, age-based workplaces, as well the avoidance of age-related prejudices and age distinction which might cause stress and dissatisfaction in older workers” (page 10).⁷⁶

While these observations have some value, the limitation with this sort of analysis is that it makes presumptions about the structure of work and the types of workplaces where workers are employed. For example, such policy prescriptions/interventions will have little practical relevance to workers in smaller enterprises where things such as workplace health promotion, anti-discrimination practices and workloads adjusted for age are unlikely to be found either now or in the immediate future. As the study of Breslin and Smith⁴⁸ highlights, in an increasingly fluid labour market marked by shorter job tenure, the job experience of older workers will count for less. Further, as another Canadian study indicates, the age-related impacts of health may be mediated by a number of other factors, including an individual’s desire for more permanent work and expectations they can achieve, as well as various forms of social and financial support available to them.⁷⁷

The growth of precarious employment amongst older workers raises a number of important policy questions that are yet to be explored. These include the effects of premature burnout, the curtailing of stress-related compensation claims or special absence provisions in some countries, and whether older workers who suffer an injury or disease at work are in a more vulnerable position in terms of rehabilitation/return to work where they are engaged on a temporary basis.

4.6.4 YOUNG WORKERS

Children and young people work in a variety of occupations, both paid and unpaid (as a family helper in a small business), both in the formal sector (as in a casual job in a retail outlet) and in the informal sector (i.e. jobs in the ‘black’ economy). The number of children and young people actually working is unclear, but limited studies that have been carried out suggest it is substantial.⁷⁸ One problem in collecting data is ethics-based prohibitions in surveying children and unreliability of parents as an alternative source of information. Work can be fulfilling and an educative undertaking for young people, but for some, at least, it can also entail exploitation and being placed at unacceptable risk of injury or illness. Information on the risks to young workers (especially children and young adolescents) is fragmentary, mainly pertaining to retailing/hospitality (including occupational violence), construction and agriculture/farming.^{46, 71, 79–81} While the problem of child labour has largely been seen as a historical anachronism in developed countries, there is some evidence that it has re-emerged as an issue – a re-emergence facilitated by the growth of flexible and largely invisible work arrangements such as work in the home.⁸²

Lack of experience and lack of training puts young workers at a higher risk of sustaining workplace injury, but other factors also come into play, including the types of jobs these workers are concentrated in.⁸¹ Young workers make up a high proportion of reported injuries in the workplace. This is due to the high rate of young workers in

occupations and industries that are characterised by part-time, casual and temporary work. That non-permanent employees tend to be younger is consistent with an increase in precarious employment and the frequency with which new entrants to the labour market are employed in these forms of employment. Other recent research has found a very high concentration of young workers (including children) in casual employment.⁷⁸ As noted elsewhere, some types of home-based work are also conducive to the employment of children and the re-emergence of health hazards historically associated with this.⁵⁹ This type of work, such as work in shops or fast-food outlets, is often typified by low initial and ongoing training and limited supervision. As studies amply demonstrate, such jobs can be hazardous, and there is an argument for even more stringent provision of training and supervision.⁴⁶ Overall, there is a gap in research in terms of the effect of the changing integration of young workers into the workplace and changes occurring in those workplaces. The re-emergence of children or very young persons working has been a subject warranting investigation and reconsideration of existing regulatory requirements in the USA and Australia (where reviews have been undertaken in a number of states such as Queensland, NSW and Victoria, though with limited attention to OHS).

SECTION FIVE

WORKING HOURS AND

WORK-LIFE CONFLICT

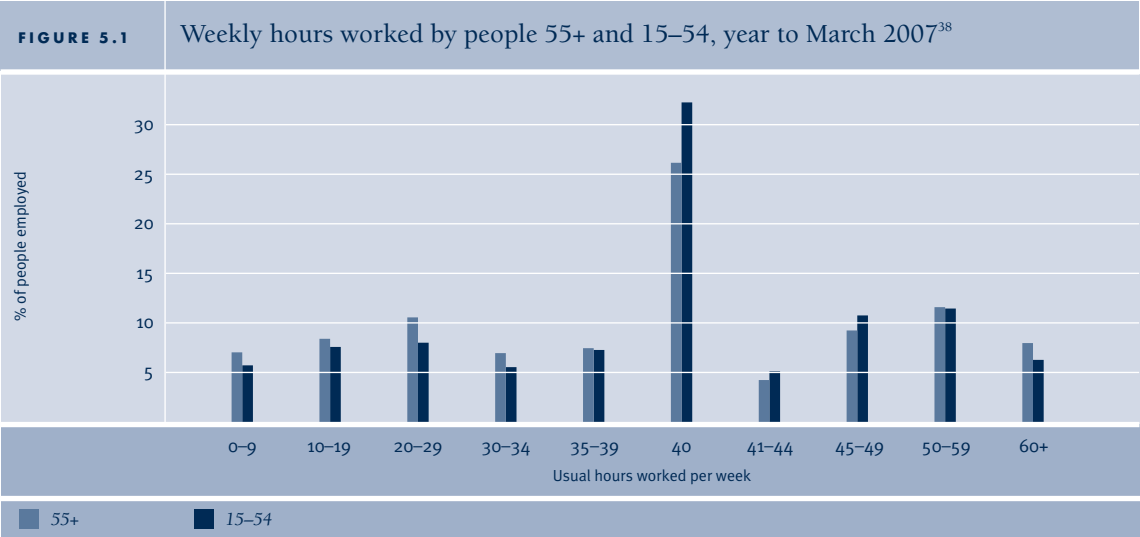


Chapter 3 outlined New Zealand’s strong labour market growth in terms of demand and in participation rates across all major demographic groups. This growth has redrawn the boundaries of the paid labour market, resulting in lower levels of unemployment and increased participation rates of women, older workers and ethnic groups. Chapter 4 discussed the changing occupational and industry labour market patterns in terms of age, gender and ethnicity as participation rates increase and employers look to new avenues for replenishing labour. A further significant feature of the labour force in New Zealand is occurring through changes in working hours, including the amount and distribution, and the implications these changes have on OHS. After a discussion of trends in work hours, the report will turn to the impacts this has on work-life conflict.

5.1 WORK HOURS

Over the last decade, there have been several changes in the working hours of the employed population in New Zealand at an aggregate level, including an increase in total working hours produced by a growth in total employment. Average annual working hours did decrease (marginally), however, from 1,830 in 2000 to 1,809 in 2005,⁷⁵ which may reflect a decline in the proportion of the workforce working extended hours and a growth in work on a part-time and standard hours basis. In 1996, 42 per cent of the workforce worked standard hours (35 to 44 hours per week) but this figure has risen to 49 per cent.³⁶ Figure 5.1 displays average hours worked by two age groups (15–54 years and 55+ years). The older group is more evenly spread over the range of working hours, with greater concentration at each extreme.

While extended working hours and very long working hours have distinct OHS implications, some groups of employees working these extended hours are even more likely to be at risk of injury and illness. The fatigue associated with working excessive hours decreases responsiveness and muscle strength, increasing the risk of injury.

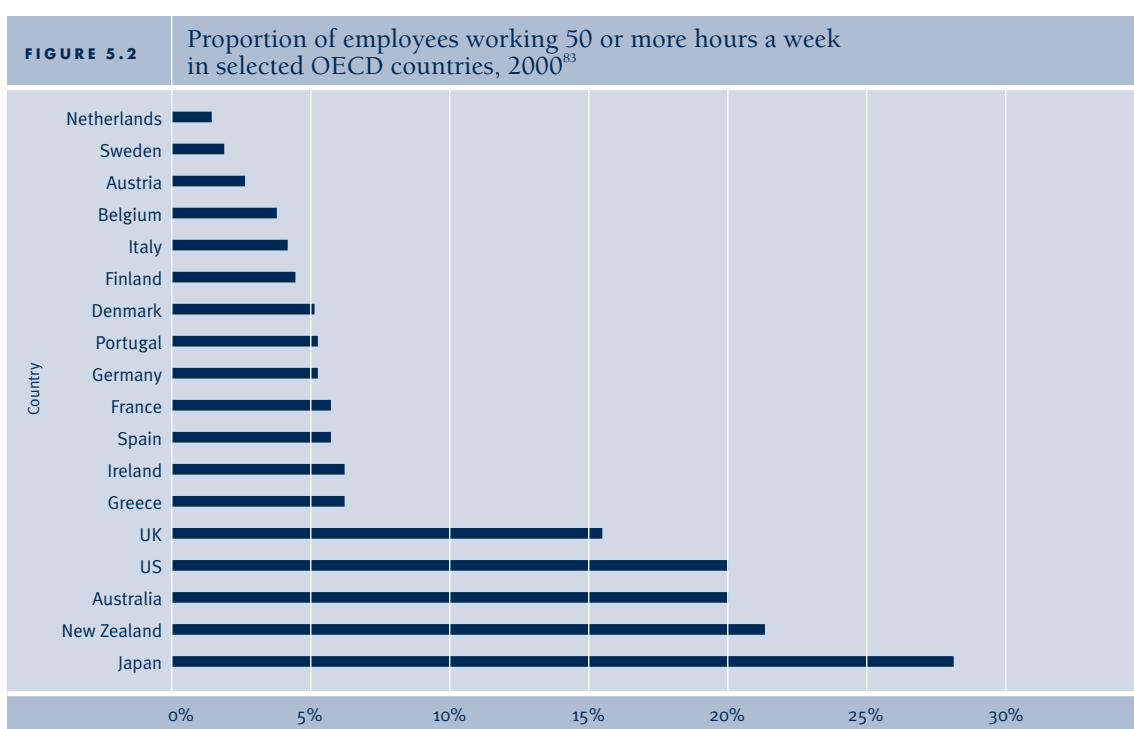


Workers under the age of 45 are more likely to work between 30 and 40 hours (60 per cent) than those over the age of 45 (see Table 5.1). Once again, a larger proportion of the oldest group, those 65 years and older, are reported to be working more than 40 hours.

TABLE 5.1	Hours worked in a typical week by age, 2006¹⁴⁷		
	Less than 30 hours (%)	30 to 40 hours (%)	40 hours or more (%)
Under 45	8	60	32
45 to 54	15	52	33
54 to 64	18	52	30
65 and older	18	47	35

5.1.1 LONG HOURS

New Zealand has been significant internationally for the proportion of employees working 50 or more hours per week according to an OECD report released in 2000 (see Figure 5.2). These long hours have significant implications across OHS risk categories and deserve specific research and policy attention. The most recent figures suggest the proportion working long hours has diminished somewhat but comparable data is not available for other OECD countries. Callister⁸³ reports that “while average hours of work have, overall, declined slightly for employed individuals, there has been some polarisation of hours with, in most age groups, growth in both short hours and long hours”.



Long hours are worked primarily by management and skilled workers, or manual labourers. More than half (54 per cent) of legislators, administrators and managers are working more than 50 hours a week, while just less than half (49, 48 and 47 per cent respectively) of plant and machine operators and assemblers, trades workers, and agriculture and fishery workers do so.

TABLE 5.2	Usual hours worked per week by occupation, 2000 ¹⁹						
	Less than 30		40-49		More than 50		Total
	N	%	N	%	N	%	N
Legislators, administrators and managers	27.2	10.4	93.9	35.8	140.9	53.8	262.1
Professionals	55.4	17.1	153.7	47.5	113.8	35.1	323.9
Technicians and associate professionals	53.4	21.5	132.7	53.4	61.6	24.8	248.5
Clerks	77.8	30.0	147.3	56.8	34.0	13.1	259.4
Service and sales workers	143.7	45.0	118.0	36.9	57.2	17.9	319.6
Agriculture and fishery workers	33.4	24.8	45.0	29.4	74.2	48.4	153.2
Trades workers	10.3	5.0	97.2	47.6	96.6	47.3	204.3
Plant and machine operators and assemblers	13.2	7.1	82.0	43.9	91.6	49.0	187.0
Elementary occupations	43.8	35.4	50.3	40.6	29.5	23.8	123.9

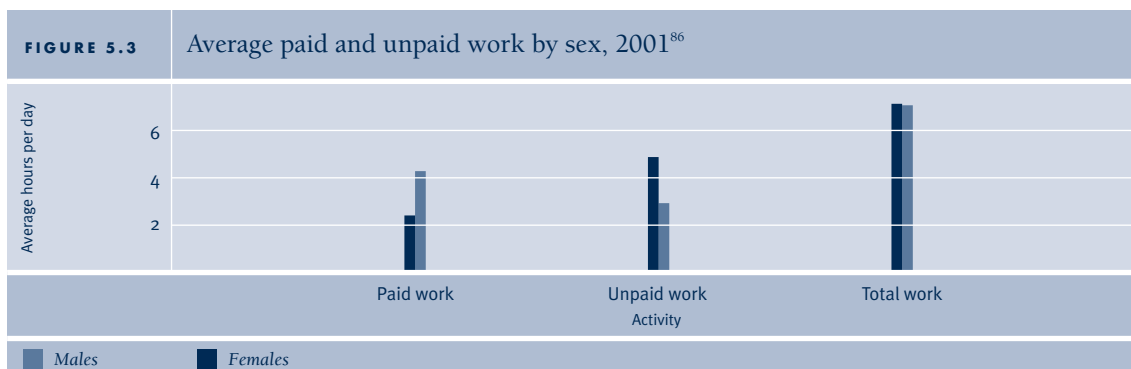
Table 5.3 shows men are more likely to work extended hours (more than 45 hours a week) than women (42 per cent compared to 16 per cent).⁸⁴ This is a decrease from 52 per cent of men in 1996 and 50 per cent in 2001.⁸⁴ It is difficult to compare the exact proportions of men and women working long hours, as data provided by Statistics New Zealand are not disaggregated by part-time/full-time status. The higher proportion of men working longer hours than women could reflect the higher proportion of men in full-time work, although it may also be due to a general trend for men to work longer than women.

TABLE 5.3	Usual hours worked by gender, 1996, 2001 and 2006 ⁸⁴		
	1996 %	2001 %	2006 %
Males			
1 to 29 hours	10	10	10
30 to 44 hours	38	40	48
45 to 59 hours	35	33	31
60 hours or more	17	17	11
Females			
1 to 29 hours	32	31	35
30 to 44 hours	47	48	49
45 to 59 hours	15	15	13
60 hours or more	6	7	3
Total			
1 to 29 hours	20	20	22
30 to 44 hours	42	44	49
45 to 59 hours	26	25	23
60 hours or more	12	12	7

A study into working hours in 2002 found that there is external and internal pressure on individuals to work excessive hours. Some reasons for this include money, job insecurity, under-staffing, commitment to work, 'nature of the job' and an expectation of voluntary work as part of the job.⁸⁵

It should not be forgotten that, while men may work longer in paid employment, women work longer unpaid hours, so that when the two are combined, men and women work quite similar hours (see Figure 5.3). The implications of this are discussed in Chapter 8, but it is worth repeating here, as the combination of paid and unpaid work can

lead to long hours that may be otherwise overlooked. Especially in terms of OHS risks, scrutiny of long hours should clearly examine the total load of paid and unpaid work. Further, this data comes from the 1998 Time Use Survey, and much has changed in the past ten years. A more up-to-date Time Use Survey is expected to be released in 2008, which will provide more relevant information.



5.1.2 SHIFT WORK

There is little statistical evidence regarding the prevalence of shift work in New Zealand. The most recent source of data comes from an analysis of the New Zealand Blood Donors' Survey,⁸⁷ which found that 22 per cent of those in the sample worked some form of shift work, including rotating shifts with or without nights, and permanent nights.

Some industries are more likely to employ shift workers than others. Table 5.4 lists those that employ high proportions of shift workers in Australia. These industries are also likely to be major employers of shift workers in New Zealand.

TABLE 5.4	Major industries involving shift work and extended working hours⁸⁸
Industry	
Essential services such as electricity, water, power, sewage, post and telecommunications, police, customs, quarantine	
Production industries with continuous processes (mining, oil refining, smelting, furnace, plastic)	
Manufacturing industries that are capital intensive or where demand exceeds capacity	
Health services such as hospitals, ambulance, pharmacies, medical clinics and laboratories	
Social and community care services	
Transport – bus, tram, train, shipping, coach and airlines	
Food production and processing – farming, fishing and manufacturing such as baking and cheese-making	
Hospitality – restaurants, hotels, clubs, casinos	
Tourism industry, including airlines, resorts and hotels	
Service industries, such as security and cleaning	
Data processing centres, such as finance, banks and insurance	
Media – newspapers, broadcasting, television	
Entertainment – artists, performers, producers, technicians and theatre staff	
Retail shops, supermarkets and so on	
Education, particularly tertiary and further education, but also early childhood care	
Call centres, especially those with clients in a range of time zones	

5.1.3 EVENING AND WEEKEND WORK

A study by Dixon and Callister⁸⁹ analysing data from the Time Use Survey found that, while only a small amount of work was undertaken outside the 8am to 6pm timeframe, the majority of men (71 per cent) and many women (49 per cent) did undertake some work outside of these hours. They further found that the majority of work is undertaken on the boundaries of this time period. However, they also found 45 per cent of those who filled out time use diaries (the method of collection of the data) worked on Saturdays, and only slightly fewer on Sundays.

A study by the OECD cited in Tucker⁹⁰ finds that temporary workers are more likely to work evening and weekend shifts, and this is more likely to occur in order to satisfy employers' production needs rather than workers' time preferences. The study by Dixon and Callister⁸⁹ argues that evening and weekend work is higher for Māori and Pacific peoples than Europeans. They reason that this is due to the lower-skilled work that is done by these ethnic groups, which limits their bargaining powers as to when they can do work. They were unable to find a straightforward relationship between skill level and evening and weekend work, in comparison to international studies, where this was a strong finding. Once more, it should be noted that this analysis comes from the 1998 Time Use Survey, and work has shifted a lot since then.

That weekend and evening work is prevalent in today's labour market is not surprising given current labour market shortages and higher expectations of output due to these circumstances. Dixon⁹¹ points out that the deregulation of the New Zealand labour market in the early 1990s made it easier and cheaper for employers to expect employees to work in the evenings or on the weekends, as there is no longer the expectation that they must provide overtime or penalty rates as compensation. Even for workers covered by collective bargaining (which, it must be noted, covers 61 per cent of workers in the public sector but only 9 per cent of private sector workers), trends were for overtime and penalty payments to be removed from the 1990s onwards. As at 2007, analysis of collective agreements reveals that about a third contain no overtime provisions for work in excess of 40 hours, or for work carried out on Saturdays or Sundays.⁹²

In addition to the economic and social pressures for non-standard work, the intrusion of paid work into the domestic sphere has also been facilitated by the increased function of technology. Laptops, PDAs and mobile phones have all aided the increased working hours now done during evenings and weekends. This concept will be expanded on in Chapter 7.

5.1.4 FLEXIBLE AND IRREGULAR WORKING HOURS

In November 2007, the New Zealand Parliament passed the Employment Relations (Flexible Working Arrangements) Amendment Act 2007, which came into force on 1 July 2008. The Act provides for employees with at least six months' service with their employer, and who have caring responsibilities for someone else, to ask their employer to vary their hours of work, days of work, or place of work. The Act requires employers to consider the request for flexible working arrangements and provides the only grounds upon which they can refuse a request, together with a process for how requests are to be made and responded to.

While it is widely agreed that flexible working hours are often beneficial for both employer and employee, there are potential disadvantages, especially for workers without good bargaining rights. However, it may be some years before any effect of increased flexible working hours becomes apparent and can be accurately assessed. For example, it could be argued that the encouragement of flexible work arrangements may contribute to a higher rate of New Zealanders undertaking evening and weekend work.

5.2 WORK-LIFE CONFLICT

It is well established that evening, weekend and rotating shifts are likely to dislocate social and domestic life. Shift workers on rotating schedules often have limited opportunity to maintain informal social contact with family and friends or to participate in community groups, organised sport and other group-based leisure activities. This dislocation may reflect both a reduced amount of free time outside work and the diminished social value of that time. It is unsurprising that shift workers and their families are less satisfied with the time they spend together than day workers and their families.⁹³ Conversely, those who like shift work often report that time off during the day is convenient for shopping, medical consultations and other solitary leisure or domestic activities.⁹⁴

Women, in particular, may seek family-friendly work schedules even though they have negative effects on sleep and fatigue. Gadbois⁹⁵ found that 85 per cent of female nurses on permanent night shifts had requested them to accommodate family responsibilities, a tendency found elsewhere.⁹⁶ Gadbois also found that domestic activities and responsibilities tended to take priority over daytime sleep, and night nurses with dependent children had one to one-and-a-half hours' less sleep per day than nurses without children.

It should not, however, be assumed that shift work is the only type of work arrangement that produces significant work-life conflict for women with dependent children. Young adults without dependents, for example, may particularly dislike evening and weekend work because of disruption to their social lives.⁹³ In fact, a study of Australian nurses found that levels of reported work-life conflict were not related to gender or domestic roles.⁹⁷ Both factors were, however, linked to the types of conflict reported. Single nurses reported constraints on social activities and particularly on opportunities to meet prospective partners, but noted the benefit of time flexibility during the week. Women and men living with partners and no dependents complained of an inability to maintain regular meal times while also noting benefits of time flexibility. Men pointed to constraints on social and domestic activities and conflict with family and partners over daytime sleep. Women valued flexibility for leisure and domestic tasks. The concerns of women and men with partners and dependent children were quite different. They focused on domestic disruption, including strain on marital relationships. Women particularly reported time pressure, guilt about negative effects on the family and both emotional and time-based work-life conflict. Men reported constraints on social life and negative effects on relationships.

Other studies have highlighted work-life conflict amongst male shift workers.⁹⁸⁻⁹⁹ Within a mostly male sample working on regular rotating shifts, those who reported the shift schedule did not have advantages for family life reported more psychological distress, anxiety, chronic fatigue and physical symptoms.⁹⁸ Unfortunately, few reported substantial advantages for family life (10 per cent), social life (4 per cent) or rest and relaxation (15.1 per cent).

Partners confirm male workers' views about the negative effects of shift work on family life. Smith and Folkard¹⁴⁸ surveyed partners of male nuclear power workers employed on continuous (24/7) rotating shifts and found that more than half (53.3 per cent) were unhappy with their spouse's shift work, and more (67.6 per cent) reported it had caused moderate to high disruption to their own lives.

There is less evidence on the impact of shift work on life outside the family. Herbert¹⁰⁰ examined effects on leisure activities over two and a half years, focusing on activities that workers considered were hindered or facilitated by shift work. As their experience of shift work increased, the participants reported greater hindrance to many activities, including social and family contact, study and watching sport and television. They reported that activities such as housework, running errands, household maintenance and, interestingly, childcare were facilitated. Overall though, fewer activities were facilitated. Experience of shift work improved workers' capacities to manage some aspects of work-life conflict but not others.

The expansion of the proportion of the workforce working long hours, the growth of irregular working hours and the growing diversity of shift schedules are significant pressures increasing work-life conflict. It is often argued that ‘flexible’ forms of work are ‘family friendly’, offering greater freedom to accommodate the conflicting demands of work and domestic roles more effectively. It is true that workers may benefit from the capacity to adjust working time to their commitments outside work, especially in dual-income or single-parent families with high work hours.¹⁰¹ Unfortunately, however, many of the changes in workplace flexibility have been driven largely by the desire of employers to reduce labour costs and provide more responsive product supplies and services, and thus the degree to which employees realise benefits as part of this drive is not guaranteed.

In the United States, flexible hours are largely restricted to full-time workers on more than 50 hours per week or the less privileged who work short, irregular or antisocial hours.¹⁰¹ Flexibility appears to come “at the dear price of lost leisure time, significantly lower earnings, a checkered career progression or stresses associated with irregular work” (page 65). It appears that, rather than being family-friendly, precarious work often places heavy pressure on workers to juggle work and family life in inconvenient and highly stressful ways.¹⁰³

Caring responsibilities may add another dimension to work-life conflict. The load on those who care for family or other members of the community can be examined in various ways, including as a form of unpaid work. Data from the 2006 Census indicate that 420,000 New Zealanders had provided support for an individual with ill-health or a disability in the previous four weeks. The Hon Ruth Dyson,¹⁰⁴ the then Minister of Labour and Associate Minister for Social Development with special responsibility for disability services, found that the demands of caring often place carers at greater risk of stress, depression and other health problems. Care for the elderly is emerging as a major demand on the mature (baby boomer) working population.¹⁰⁵ Adams and Geller¹⁰⁶ have argued that policies and regulations regarding work-life balance should better integrate the household into labour market policy.

The timing of many important domestic, social, sport and leisure activities is relatively inflexible and, therefore, the daily and weekly scheduling of work critically affects workers’ ability to participate meaningfully in them. If flexible work practices are to assist workers, rather than simply satisfy the needs of employers, they must genuinely allow workers the opportunity to organise working time to accommodate significant commitments outside work.

5.3 KEY INFORMANT INTERVIEWS

Key informants were unanimous in identifying the changing patterns of working hours as a major feature of change in the labour market over the past decade. They were not as conclusive on the priority they attached to these changes as issues of significance for occupational health and safety. However, the difficulties presented to surveillance arrangements by the increased incidence of multiple part-time jobs, and serial contract and casual employment, were identified by several of them.

The informants were also agreed on the interactive nature of components of risk in the contemporary New Zealand labour market. They placed particular emphasis upon the obvious linkages between working hours and fatigue-related risks in workplaces, but also argued the importance of the interrelated nature of the elements of accumulated risk resulting from interplay between working arrangements and a variety of physical and psychosocial conditions. Two informants cited their familiarity with the overseas research in this regard. The informants’ comments accorded strongly with the observations in the three reports^{9–11} of the European Agency, and especially the report concerning psychosocial risk factors.¹¹ However, it is noteworthy that all informants considered were selected for their OHS knowledge and expertise, making them far more highly attuned to issues of occupational health and safety than would typically be expected in New Zealand workplaces.

The irregular nature of working arrangements was cited by all key informants as a significant aspect of change in the New Zealand economy. However, they did not all have strong views regarding the effects of these arrangements on occupational health and safety outcomes. The most frequently cited connection was through a perceived decline of training effort associated with the less regular working time arrangements. They felt that compression of hours and intensification of working time contributed to the reduced effort. Several cited an increasing focus on the impacts of working arrangements upon work-life balance in the public debate in recent years. Several held suspicions that work-life balance may contribute to negative psychosocial effects.

5.4 IMPLICATIONS FOR OHS

5.4.1 LONG HOURS

As early as World War I, industrial psychologists had amassed substantial evidence indicating that long working hours have negative effects on fatigue and injury. Reviews of the scientific literature since the early 1990s have added considerable fuel to concerns about OHS effects. Harrington¹⁰⁷ concluded that there is a threshold, somewhere between 48–56 hours per week, beyond which working time “carries serious health and safety implications”. Spurgeon, Harrington and Cooper¹⁰⁸ later reviewed evidence concerning the impact of overtime on the health, performance and safety of workers on eight-hour, weekday schedules. They observed that there had been too little research on the topic but found sufficient data to assert that it “is difficult to escape the conclusion that [working hours greater than 50 hours per week] are detrimental to health and wellbeing” (page 372). Mental health and cardiovascular effects were the most widely investigated.

Evidence regarding performance and safety is more sparse, with some of the best evidence on performance stemming from studies in the late 19th and early 20th centuries. Spurgeon et al.¹⁰⁸ observed that long hours are likely to exacerbate the impact of other occupational risks simply by increasing exposure. They noted the need for further research, particularly in relation to gastrointestinal, muscular-skeletal, immune and psychosomatic effects; fatigue and performance; chemical and other toxic exposures; home, family, leisure and quality of life effects; and the impact of “moderate overtime” (between 40 and 50 hours per week). A subsequent study by van der Hulst and Geurts¹⁰⁹ highlighted the importance of control over additional hours, finding that involuntary overtime in low-reward jobs was associated with particularly negative effects on work-life balance and mental health.

A later review of the OHS effects of overtime and extended shifts by the US National Institute for Occupational Safety and Health¹¹⁰ examined findings from 52 studies. Overtime was associated with poorer outcomes in terms of subjective health, injury rates, illness or mortality in 16 of 22 relevant studies. Diminished psycho-physiological performance and more injury were found when 12-hour shifts were combined with work weeks longer than 40 hours. Decreased alertness, increased fatigue, diminished vigilance or greater injury frequency between the ninth and 12th hour of 12-hour shifts were observed in four studies. Interactions between 12-hour shifts and other work demands were also noted. For example, six studies that examined 12-hour shifts combined with work weeks longer than 40 hours reported more health complaints, poorer performance or reduced work rates. One found more favourable sleep quality, wellbeing and alertness outcomes when workers were given some control over starting times on 12-hour shifts. Two studies comparing eight-hour and 12-hour schedules reported more physical fatigue, and greater tobacco and alcohol use were associated with 12-hour shifts. Caruso and colleagues¹¹⁰ noted that more definitive conclusions about the differences between eight- and 12-hour shifts could not be reached because the comparisons in many studies were confounded by various other scheduling differences.

Most recently, Dembe and colleagues¹¹¹ used a US national survey of 10,793 respondents to examine various effects on injury and illness. The longitudinal data were drawn from a representative cohort of US residents born between 1957 and 1964, and 89,729 person-years of data collected between 1987 and 2000 were analysed. Analyses were controlled for occupational exposure, age, gender, occupation, industry and region. The results showed substantially increased injury rates for employees working overtime (61 per cent), long days (37 per cent) and extended work weeks (23 per cent). There was a steady increase in injury rates as daily working hours increased above eight hours and weekly hours increased above 40. The relationship is strongest for those who work more than 60 hours a week, or over 12 hours a day.

In response, Loomis¹¹² noted that average working hours in the US have increased since the 1970s while overall rates of injury and illness have fallen. Loomis also observed that the greatest difference in risk between extended working hours and standard hours occurred in the 1980s. He suggested that longer hours may increase risk for only some workers, presumably including the age cohort that Dembe and colleagues¹¹¹ studied. It seems likely, however, that countervailing factors, such as improvements in technology, the decreasing prevalence of manual work and changes in injury reporting practices, may have disguised the negative effects of longer hours in recent years.

Representative and integrative models defining the causal pathways through which long hours influence health have yet to be adequately developed and rigorously tested. Spurgeon et al.¹⁰⁸ observed that the complex interactions between the variables contributing to the effects of long hours required greater attention. Newcombe¹¹³ noted that a fundamental issue in evaluating the links between long hours and health is to disentangle direct causation, confounding effects and selection effects. Control for the confounding effects of age or sex may be appropriate. However, some studies may have systematically underestimated the health effects of long working hours by controlling for variables that may, in fact, be part of the causal path from overwork to illness, such as smoking, body mass index, hypertension or lipid levels. Selection effects may increase or decrease risks. Risk may be increased if workers choose longer hours for purely financial reasons or they are allocated them for organisational reasons. On the other hand, risk may be decreased if workers with chronic health problems or poor subjective health are not chosen by employers to work longer hours or self-select shorter hours.

Caruso and colleagues¹¹⁰ also concluded that insufficient attention had been paid to the effects of gender and age on responses to long hours. While long working hours have OHS implications in themselves, ageing employees working these hours are even more likely to be at risk of injury and illness. The fatigue associated with working long hours could increase the likelihood of this population suffering a decrease in responsiveness and muscle strength that they are already likely to experience, which could further lead to increased risk of injury.

5.4.2 SHIFT WORK

Various forms of shift work, particularly those requiring night or early morning work, have long been recognised to have negative effects on fatigue, mood, subjective health and performance.^{114, 115, 117–119} These effects are widely attributed to the disruption of sleep and circadian rhythms caused by night and early morning work. The European Agency for Safety and Health at Work report¹¹ on psychosocial risks is very clear in identifying the effects of working arrangements as a major area of concern requiring ongoing investigation.

Despite the strong focus of shift work research on aspects of health, there is relatively little evidence regarding effects on disease and mortality. Mortality data are particularly limited. Although the authors of a frequently-cited epidemiological study¹²⁰ published in the early 1970s concluded that shift work appeared to have no adverse effect on mortality, a re-analysis of the data identified effects. Knutsson et al.¹²¹ calculated age-adjusted mortality rate ratios and age-specific relative risks. They found that former shift workers had a higher mortality rate than day

workers but that current shift workers only had a higher mortality risk than day workers in the 45–54 age group. They noted, however, that selection effects may contribute both to findings that current shift workers are no less healthy than day workers and that former shift workers experience greater health problems. Workers may leave shift work, for example, as a result of other occupational or non-occupational exposures. Akerstedt et al.¹²² studied differences in mortality between shift workers and day workers in a sample of 22,411 respondents to the Swedish National Survey of Living Conditions. They found that the mortality of shift workers was higher amongst female white collar workers but not male white collar workers or blue collar workers (male or female).

In the 1980s, several reviews of the limited research on the contribution of shift work to disease reached conflicting conclusions.^{123–125} However, since that time, growing evidence has linked shift work, particularly when it includes night work, to cardiovascular and gastrointestinal disease, reproductive disorders and cancer.^{126–128} Driscoll et al.⁷ also identified varying levels of evidence that shift work causes peptic ulceration, ischaemic heart disease, female reproductive disorders, obesity, diabetes mellitus, hypertension and disorders of the immune system.

Since the early 1990s, there has been a substantial growth in evidence that shift work involving night work is linked to cancer risk. In 2007, a working party of the WHO International Agency for Research on Cancer (IARC) concluded that “shift-work that involves circadian disruption is probably carcinogenic to humans”, defining it as a Group 2A carcinogen (page 1065).¹²⁹ Six of eight epidemiological studies cited by the group found a modestly increased risk of breast cancer amongst workers doing shift work with night shifts compared to those who were not. Similar results were noted in studies of female flight attendants who experience circadian disruption from frequent time zone changes. The working party noted evidence suggesting that exposure to light at night and sleep deprivation lead to suppression of melatonin production and immunodeficiency, creating a pathway to cancer development.

Newcombe’s observations¹¹³ regarding the need to disentangle the direct causative effects of long hours from selection and confounding effects are also salient with regard to shift work. Smoking, for example, is often considered a confounding factor in shift work studies and statistically controlled during data analysis. Several cross-sectional studies have, however, linked shift work to an increased risk of smoking.¹²⁷ Prospective longitudinal relationships have also been found between shift work and both increased cigarette consumption and the risk of taking up smoking, suggesting a causal path to higher disease and mortality risks.^{130–131} Consequently, it is inappropriate to control for smoking when assessing the impact of shift work on diseases that are smoking-related, such as lung cancers or coronary heart disease. The same may be true of other variables used as statistical controls, such as obesity and stress. Particular care should be taken to evaluate the appropriateness of statistical controls when evaluating evidence on the impact of shift work on health or mortality.

Unfortunately, there is still only rudimentary knowledge of the processes by which various immediate and relatively well-understood effects of shift work, such as sleep disturbance, circadian disruption and work-life conflict, combine to produce disease and mortality in the longer term.¹²⁸ A key element of this problem is the limited attention paid to the development and testing of theoretical models to explain the relationships between the variables influencing shiftwork intolerance and its effects. Although more complex models have recently been tested by applying more sophisticated statistical techniques, they tend to be focused on relatively constrained sets of variables and relatively narrow samples of shift workers.

Evidence regarding the effects of shift work and night work on overt injury, rather than performance and alertness deficits believed to increase injury risk, has grown substantially in recent years. For example, using data from all road traffic accidents involving taxis in New South Wales between 1996 and 2000, Lam¹³² found that crash-related injury and mortality amongst the 7,923 drivers affected was 60 per cent higher for those who worked at night. Fransen and colleagues⁸⁷ analysis of the New Zealand Blood Donors’ Survey indicated that rotating shift workers employed on occasional night shifts had double the risk of injury or illness, regardless of other individual, lifestyle

or occupational factors. Rotating shift workers whose rosters did not include night work were still 75 per cent more likely to be at risk of a workplace injury than non-shift workers. Shift workers on permanent shifts, such as permanent nights or evenings, were less susceptible to injury or illness. Niedhammer¹³³ found that permanent and rotating shifts and night work were all risk factors for sickness absence for men and work injury for women.

5.4.3 FLEXIBLE (OR IRREGULAR) HOURS

A recent development within the working hours literature^{128, 134–139} is a focus on the effects of irregular hours, which are often associated with flexible and insecure employment. For the worker, irregular hours may combine the demands of shift work (particularly night, evening or weekend work) with unpredictability and limited control over the timing of work.

Control over hours is an important element affecting the impact of working hours on health,¹⁴⁰ and the negative effects of irregular working hours appear to be most marked when control over work schedules is low. A qualitative study of casual employees in Sydney five-star hotels found marked differences in hours and control between casual and ‘permanent’ employees.¹⁴¹ Casuals were more likely to work highly irregular hours with much less control over when they worked. Their weekly working hours varied between zero and 73 hours, as dictated by organisational requirements. There was similar variability in daily hours. Long working hours, combined with low predictability and control, produced greater disruption to family and social lives and poorer work-life balance for casuals. Uncoordinated hours across multiple jobs exacerbated these problems in some cases. Health-related issues reported to arise from the high level of work-life conflict included sleep disturbance, fatigue and disrupted exercise and dietary regimes. Many of the casual employees reported that they could not afford to live in the inner city, close to their work, and therefore spent a long time, relative to their working hours, commuting to and from work. This travel made short call-back times or short shifts especially burdensome.

Costa et al.¹³⁵ investigated two approaches to working hours arrangements. The first, which they described as variability, reflected employer control over hours to respond most efficiently to economic and technological demands. The second, which they labelled flexibility, reflected individual workers’ discretion and autonomy to adjust working hours to reduce work-life conflict and better accommodate other activities, needs and responsibilities. Using data from 21,505 respondents to the Third European Survey on Working Conditions, they evaluated the effects of variability and flexibility on a variety of health disorders and psychosocial variables. The results indicated that the most positive effects on health and psychosocial wellbeing were associated with higher flexibility and lower variability. Flexibility was one of the most important of the 12 intervening factors tested, having some amongst the strongest effects on many of the outcome variables measured.

Elsewhere, Giuliano¹⁴² found that, while reduced commuting time may be a benefit for some contingent workers, when home-based employees and the self-employed were excluded, commuting times for full-time contingent workers were significantly longer than those of non-contingent workers.

5.4.4 WORK-LIFE CONFLICT AND HEALTH

Various studies have demonstrated that work-life conflict arising from shift work and irregular hours has negative effects on health.^{96, 143–146} These health effects have been linked to both objective and subjective measures of conflict.⁹³ Health indices on which work-life conflict has been found to have negative effects include mood, fatigue, psychological wellbeing and physical symptoms.

Research in nursing^{97, 146} indicates that work-life conflict has negative effects on fatigue (on awakening and at work), psychological wellbeing and physical symptoms. Kundi and colleagues¹⁴⁹ found that, for groups of nurses employed on both eight-hour or 12-hour shifts, the most important variable intervening between health outcomes and a cluster of demographic and workplace variables was “adverse social and leisure time effects”. Studies of nurses during their first 15 months of shift work have also demonstrated that work-life conflict levels after six months predicted subsequent psychological wellbeing and fatigue on night shift more consistently than a range of sleep, circadian, personality and social support variables.^{144, 150} A key element in reducing work-life conflict is the control that individual workers exert over their shift schedules.¹¹⁷

One means by which work-life conflict affects health is through sleep. Spelten and colleagues⁹⁵ found that domestic commitments are associated with reduced sleep duration, greater sleep difficulties and lower alertness at work. For rotating shift workers, work-life conflict was associated with greater sleep difficulties on every shift (morning, afternoon, night). Interestingly, permanent night nurses reported lower work-life conflict and were more likely to have chosen their work schedule because of domestic commitments, but slept less than nurses on rotating shifts. It appears that permanent night workers may actively sacrifice their health, particularly in terms of fatigue, for a schedule that facilitates domestic work. For both permanent night workers and rotating shift workers, having more dependants was associated with shorter sleep on night shift. Other evidence from sleep diaries and interviews confirms that domestic responsibilities curtail and disrupt sleep.⁹⁷

5.5 RESEARCH AND SURVEILLANCE NEEDS

5.5.1 LONG HOURS

Long working hours have emerged as a policy issue in several countries, partly as result of the introduction of longer shifts (most commonly 12-hour shifts) into hazardous industries (such as mining and road transport), the growth of multiple job holding and long distance commuting and the removal of regulatory restrictions on working hours arrangements in collective industrial relations laws and agreements. In Australia, concern over the OHS effects of long hours, especially with regard to mining, has led to government inquiries in Tasmania, Western Australia and New South Wales and the introduction of new working hours codes in two states. National data on working hours in New Zealand are currently limited, and organised surveillance should be considered a priority, and the possibility of regulating very long hours should be considered if they prove to be widely prevalent.

5.5.2 SHIFT WORK AND IRREGULAR HOURS

While evidence regarding the impact of shift work on disease has grown substantially in recent years, there is still much to be learned about the relative risks of different types of shift schedules, the causal mechanisms through which exposure leads to disease and the populations most at risk. Support for rigorous research on these issues should be a priority. As noted above, there is a strong need at a national level in New Zealand for regular collection of more extensive and representative data on the amount and types of shift work being performed.

Research also indicates that irregularity or unpredictability of working hours can contribute to ill health. Irregularity contributes to work-life conflict by making it hard for workers to plan activities outside work, such as childcare, social activities or even paying bills (see the discussion of the externalities of precarious employment in the next section for evidence of the last issue). This evidence highlights a question regarding the extent to which workers should be able to exert control over their working hours, and several studies^{140, 152} cited elsewhere in the report indicate that control exerts an important influence over health outcomes. Regulatory attention should be given to the balance between the flexibility sought by employers to adjust staffing to economic and technological demands and that sought by employees to manage work-life conflict and enhance autonomy.

Internationally, there is a tendency for working hours, especially irregular hours in non-standard employment, to be poorly recognised in OHS management systems. Recently, there have been attempts to redress this problem by providing tools and protocols to more effectively recognise and manage the risks posed by different working hours regimes.¹⁵³ It is important that these efforts are supported by regulatory requirements for better monitoring of working hours and assessment of associated OHS risks.

SECTION SIX

NON-STANDARD AND

PRECARIOUS EMPLOYMENT



The deregulation of the New Zealand labour market in the 1990s has been associated with the increase in non-standard and precarious employment. Non-standard work includes a varied group of work arrangements affecting disparate groups of people in New Zealand. A study in the late 1990s found that some forms of non-standard work were growing faster than standard employment, driven partly by labour demand factors such as technological and structural change and supply factors such as family structures and social attitudes.¹⁵⁴ Non-standard work can also be seen as a result of the need to meet demand (as in emergency services and the hospitality industry) and to increase productivity (which can be seen as a direct result of ‘work intensification’).²⁰

Recent research¹⁵⁵ points to spillover effects from the presence of precarious workers on permanent workers in the same jobs, indicating that the effects of labour market changes are not confined to those who hold contingent jobs. Both direct hire and leased (or labour hire) employees are grouped together in the following discussion, but the examination will identify some differences in terms of OHS outcomes.

The most recent data on non-standard work are nearly 10 years old, which is indicative of the lack of information available about this important group of workers in New Zealand. The data that are available is taken from Brosnan and Walsh¹⁵⁶ and reprinted below.

TABLE 6.1 Standard and non-standard composition of the workforce, 1998 average		
	Number of workers	Proportion of workers (%)
Standard workers	746,000	43
Non-standard workers		
Part-time employee	327,000	19
Employee 50+ hours weekly	223,000	13
Self-employed	203,000	12
Employers	133,000	8
Residual casual/fixed-term	51,000	3
Residual holders of multiple jobs	26,000	2
Unpaid family worker	16,000	1
Total	1,725,000	100
Source: HLFS, Brosnan and Walsh, ¹⁵⁶ Department of Labour calculations		

As the above table indicates, non-standard employment is becoming more common than the traditional notion of standard employment. Just as the boundaries of the labour market are being redrawn, so then is the span of hours in which paid work is undertaken. The issue of non-standard and precarious employment is important in analysing OHS, as it is often cited as a cause of illness and injury in the workplace.^{90, 157} This section will look at the casualisation of the workforce, part-time employment, temporary work, on-call work and staff turnover, and the effect of these on disease, illness and injury.

6.1 CASUALISATION OF THE WORKFORCE

In recent years, what has been called a ‘casualisation of the workforce’ has occurred in many western nations, including New Zealand. This term refers to the increase in part-time, casual and temporary workers. For the purposes of this section, discussion will primarily be restricted to part-time and temporary work, as data on casual work in New Zealand are limited, as they are not collected by the national statistical agency, and the last survey on the topic was conducted in the 1990s, making the data largely irrelevant. In their analysis of casual work in Australia and New Zealand, Campbell and Brosnan¹⁵⁸ liken the patterns occurring in Australia to that of New Zealand. They argue that the deregulation of labour laws in both countries is contributing to the phenomenon.

The logic of casualisation is that businesses are likely to employ people on a casual, part-time or temporary basis when it increases their flexibility. These workers are often subject to fewer conditions of employment than full-time employees. This allows organisations greater ability to expand or reduce the capacity of their business according to the ebbs and flows of the market, with less responsibility for the long-term welfare of their employees.

Particular groups are more likely than others to be affected by the casualisation of the workforce, as we saw in Chapter 3. Women, young people and older people, as well as Māori and Pacific peoples, are all more likely to work in non-standard and precarious patterns of employment.

6.2 PART-TIME WORK

McPherson³⁶ points to three groups that are mostly engaged in part-time work. They are young people, older people and women with caring responsibilities. The commonality of these three groups is that they often balance work with other responsibilities. Young people are often involved in part-time work while continuing their education, older people are 'downgrading' their working responsibilities while staying active in the labour force, while the caring responsibilities of women can be considered a form of unpaid labour.

A study undertaken by Dupuis and McLaren¹⁵⁹ has found that the majority of 15 to 34 year olds cite financial reasons as the main reason they work part-time (i.e. 38 per cent say they need the money), followed by childcare preventing full-time work (20 per cent), followed by study preventing full-time work (13 per cent). These reasons would appear to indicate that those undertaking part-time work are doing so out of choice and are not necessarily being pushed into it by a tight labour market.

Nor is part-time work necessarily increasing. New Zealand time series data show that the proportion of part-time workers by gender has remained fairly constant since the 1980s.¹⁹ The 2003 to 2006 data are presented below as an example.

TABLE 6.2		Part-time employment, time series, 2003 through to 2006 ¹⁸	
		N	% (of male/female labour force)
Male			
2003		116,000	11.3
2004		120,900	11.1
2005		121,800	10.7
2006		127,900	10.2
Female			
2003		319,900	36.3
2004		321,900	35.6
2005		336,100	35.7
2006		331,900	35.6

6.3 TEMPORARY WORK

Temporary work, defined as work with a definite end point, is also increasing in New Zealand. Temporary work is often associated with seasonal employment such as in agriculture and retailing, but is also common in construction and manufacturing. Seasonal work is closely associated with migrant employment. The relationship between migrant workers and OHS is discussed in more detail in Chapter 8.

Whilst there are some exceptions – particularly in the information technology and health industries – a defining feature of much temporary work is that it is low-skilled. The defined, and usually short, duration of the employment reduces any capacity for formal training, and informal training is limited only to training for the task at hand.

Often, temporary workers are placed in jobs through labour market intermediaries such as an agency. This can cause particular problems with OHS when the responsibility for safety is not clearly the role of either the organisation the worker is employed in, or the agency placing them. A further OHS risk with temporary agency work is the disinclination for these types of workers to take sick days, or time off to go to the doctor, in case it jeopardises future work.¹⁶⁰ McLaren¹⁶¹ found that some temporary workers were required to supply their own health and safety equipment – regardless of whether they could afford it or not. This raises obvious risks where workers choose not to supply such equipment, putting their health and safety at risk.

6.4 ON-CALL WORK

Data measuring the nature and extent of on-call work has not been collected at a national level in New Zealand and has received little attention in the international literature.¹⁶² On-call work is relatively common in engineering, medical, aviation and community services industries and refers to two different schedules of work. The main type of on-call work is that in which the worker leaves the place of employment but may be called back to work. This form of on-call work is usually used to cover night or weekend work and is associated with an expectation that workers restrict their activities so they are able to return to the place of work quickly to perform work-related functions. Another form of on-call work, typically limited to the medical field, is associated with workers finishing a shift, having access to a place where they can rest and sleep at the place of employment, and being available to be woken when required. Like shift work, on-call work is associated with poor sleeping patterns, mental health issues and disrupted personal lives.

6.5 MULTIPLE JOB HOLDERS

The proportion of the workforce holding down more than one job is relatively small, with the 2006 average at 5 per cent.¹⁹ Available evidence suggests that multiple job holders work, on average, seven hours more per week than single job holders, according to data analysed from the 2001 Census.¹⁶³ Women are twice as likely to hold multiple jobs as men, with 47,232 women (or 6 per cent of the female labour force) holding down more than one job, compared to 25,788 men (or 3 per cent of the male labour force). While the number of persons working multiple jobs has increased in absolute terms in recent years, the proportion of multiple job holders has remained relatively steady.²⁰

According to analysis of 2001 Census data by Spoonley,²⁰ the rate of multiple job holding is higher in rural areas than in urban areas. His analysis shows high rates of multiple job holders within agricultural and farming industries. Unpublished LEED data from 2006 (see Table 6.3) indicates that the majority of persons with multiple jobs have their main job in the health and community services industry and that the majority of people's second jobs are found in property and business services.

TABLE 6.3	Industry of main and second jobs of multiple job holders, March 2006	
	Main job	Second job
Industry		
Agriculture, forestry and fishing	4,776	5,175
Mining	252	222
Manufacturing	7,638	4,266
Electricity, gas and water supply	117	45
Construction	2,505	1,929
Wholesale trade	3,618	2,691
Retail trade	9,273	8,889
Accommodation, cafés and restaurants	6,498	8,670
Transport and storage	2,256	2,040
Communication services	1,002	1,221
Finance and insurance	1,380	642
Property and business services	9,771	12,078
Government administration and defence	1,593	1,158
Education	5,193	4,746
Health and community services	11,760	1,1424
Cultural and recreational services	2,412	4,137
Personal and other services	2,850	3,543
Not elsewhere included	123	171
Source: Unpublished LEED data		

Table 6.4 shows the occupational differences between male and female multiple job holders. The pattern of employment of multiple job holders has changed over time. These changes are indicative of overall gendered patterns of employment, with men more likely to work extended hours and increased participation rates of women, particularly in part-time work. Women working multiple jobs are more likely to have as their main occupation service and sales work or clerical work. Men working multiple jobs are more likely to be professionals. The high rate of multiple job holding amongst women is, in part, a result of the high rate of part-time employment in service and clerical industries.

TABLE 6.4	Occupation in main job of multiple job holders by sex, March 2006¹⁹	
	Male %	Female %
Occupation		
Legislators, administrators and managers	11	9
Professionals	18	18
Technicians and associate professionals	13	15
Clerks	4	21
Service and sales workers	11	23
Agriculture and fishery workers	13	6
Trades workers	10	-
Plant/machine operators and assemblers	12	3
Elementary occupations	7	5
Total	100	100

6.6 TURNOVER

Trends in labour turnover rates did not change substantially between 1999 and 2005 as is indicated in Table 6.5. There are, however, significant differences in turnover between sectors, with industries characterised by high rates of seasonal and casual employment having the highest turnover rates. Industries with relatively high quarterly turnover rates include agriculture, forestry and fishing (36.1 per cent) and accommodation, cafés and restaurants (25.6 per cent).

Industries that are likely to be dominated by stable, full-time and permanent employment had lower rates of turnover, including manufacturing (12.7 per cent), education (13.3 per cent), wholesale trade (13.6 per cent) and government services (13.7 per cent).

TABLE 6.5		Worker turnover rates by industry, 1999 and 2006	
		1999 %	2006 %
Industry			
Agriculture, forestry and fishing		36.9	36.1
Mining, construction and utilities		16.8	14.6
Manufacturing		13.1	12.7
Wholesale trade		12.8	13.6
Retail trade		15.2	17.3
Accommodation, cafés and restaurants		23.8	25.6
Transport, storage and communication		15.8	14.2
Business and finance services		16.9	18.4
Government and other services		11.8	13.7
Education		11.7	13.3
Health and community services		14.3	14.0
Cultural and recreational services		19.3	19.3
Not elsewhere included		25.2	33.8
Source: Unpublished LEED data, 2006			

It is not surprising that the industry with the highest turnover rate (agriculture, forestry and fishing) also has the highest rates of injury claims per 1,000 full-time workers.¹⁶⁴ High turnover results in less training, as businesses are less inclined to invest money in staff with short tenure. Less training results in a higher likelihood of workplace injury and illness.

The European Agency for Occupational Safety and Health has noted the vulnerability of non-standard and precarious workers to illness, injury and disease. This is further validated by international literature from Canada.¹⁶⁵

6.7 KEY INFORMANT INTERVIEWS

The observations of key informants upon the perceived linkages between working arrangements, declining training effort and associated impacts on occupational safety and health have been reported above. Workers engaged in more precarious forms of employment were viewed as being particularly vulnerable in this regard, with the most pronounced reduction in training efforts being discernible in these segments of the labour market.

6.8 IMPLICATIONS FOR OHS

The European Agency for Safety and Health at Work¹⁰ notes that there are psychosocial risks associated with precarious employment. In particular, fixed-term and temporary employment workers in precarious employment tend to carry out the most hazardous jobs, work in poorer conditions and receive less OHS training.

6.8.1 CASUALISATION OF THE WORKFORCE

There is evidence that the irregularity of income, job insecurity and intermittent bouts of unemployment can have adverse impacts on contingent workers and their dependants in terms of diet/food choices, budgeting/meeting financial commitments/planning for family and retirement, vocational training levels and the educational performance of children.^{60, 166–167} Quinlan et al.¹⁶⁸ have suggested that this evidence has an impact that is similar to evidence on the social and health impact of poorly paid and insecure work that was found in government inquiries into sweating, factories, casual dock labour and the like more than a century ago.

The growth of contingent work has been linked to an overall increase in socioeconomic inequality. Contingent workers constitute a significant proportion of the expanding category of ‘working poor’ identified in Europe and North America.¹⁶⁹ There is extensive international evidence on adverse health and other effects, including persistent post-retirement and intergenerational effects on education and social behaviour, socioeconomic disadvantage and low pay.^{171–174}

The growth of contingent work can entail other intergenerational risks to health because it has been associated with a growth in the employment (legal and illegal) of children and young adolescents in the USA, Australia and other countries. The result has been an increased risk of exposure to hazardous substances when children or adolescents are an integral part of the work unit. An example is the case of chemical exposures to children working in family-based groups of temporary agricultural labourers.^{79, 175} Whilst this example has received public attention, toxic exposures to glues and solvents amongst young adolescents in other areas, such as construction and small-scale manufacturing, goes largely unrecognised, as do early-onset chronic injuries amongst those who help their parents with home-based garment making or electronics assembly.^{176–177} When outsourced or disorganised work settings (such as the use of day labour in demolition) lead to an increase in hazardous exposures, the effects may be transmitted to children via the clothing of their parents or genetic and reproductive abnormalities inherited from either or both parents.¹⁷⁸

A series of reviews indicate that there is now a substantial and growing body of international evidence that downsizing/job insecurity and contingent work (such as the use of temporary workers) have adverse impacts on the health and wellbeing of workers.^{179–180} A review of 93 studies covering the categories of downsizing/job insecurity, temporary employment, subcontracting/home-based work, part-time work and small business found that, overall, around 80 per cent of the studies found adverse effects on OHS. These findings carried over to all categories apart from temporary employment (where the results were less pronounced) and part-time employment (where the small number of studies largely revealed positive results).

Subsequent reviews of published research on downsizing/job insecurity and temporary work by others have reached broadly similar conclusions, including mixed results with regard to temporary employment. This has led to some speculation as to the reasons for this, including recognition of the diverse nature of temporary employment and the need to take account of exposure, as many temporary workers are engaged seasonally or part-time and an increasing number are multiple job holders.⁴⁶ It should be noted that some types of temporary employment also entail elements of subcontracting, most notably the use of agency or leased workers (reviews of studies of this type of temporary work are more uniformly negative).

Of the final 106 studies, 91 (86 per cent) linked job insecurity, temporary work or outsourcing to inferior OHS outcomes. More negative outcomes for contingent or insecure workers were identified on a variety of indices, including injury rates, occupational violence, perceived risk, illness and disease, work-related stress and subjective health, legislative compliance or protection, and OHS knowledge. Conversely, some studies identified positive effects on health and, to a lesser degree, control over working hours, absence, injury and occupational violence. The context of the study (country or industry), the research methods and the OHS indices had no apparent systematic influence on the results. The remainder of this analysis examines the evidence on each of the three categories of work separately.

TABLE 6.6		Distribution of findings within each category of contingent work or job insecurity ¹⁸¹		
		Negative effect %	Mixed effect %	Nil or positive effect %
Category of employment				
Job insecurity/downsizing		87	5	8
Outsourcing/home-based work		96	4	0
Temporary work/leased labour		68	18	14
Total		85	7.5	7.5

Another impact of non-standard and precarious work is that often the employee has little say over their task or job role. As extensive research in relation to the Karasek-inspired job strain model attests, giving workers a meaningful say or degree of task control relative to the demands made upon them is not simply an exercise in procedural justice but also has profound implications for their health and wellbeing. Studies have clearly shown that, when employees have some control of their working hours, they are able to moderate adverse impacts on work/family balance and their health and wellbeing that flow from this.^{140, 152}

6.8.2 TEMPORARY WORK

Several factors may help to account for less consistent findings regarding temporary work. First, many temporary employees work lower weekly and annual hours than their permanent counterparts because they are more likely to work part-time (for example, in fast food) or seasonally (for example, in agriculture or tourism).^{182–183} Consequently, injury and illness data from temporary workers may reflect a lower level of exposure and therefore underestimate effects in comparison to full-time workers. OHS data from temporary workers should therefore be appropriately weighted to achieve comparability. Multiple job holding should also be taken into account. For example, a recent Victorian workforce survey found that 13 per cent of workers held more than one job, and multiple job holding was more pronounced amongst among part-time and temporary workers (6.5 per cent of permanent full-time workers reported working at more than one job compared to 26.7 per cent of casual full-time workers, 19 per cent of casual part-time workers, 21.7 per cent of fixed-term contract workers and 17.5 per cent of labour hire workers).⁴¹ However, the Australian Bureau of Statistics work-related injuries series only records injuries and illnesses in the respondent's main job.

Few studies of temporary workers have weighted OHS data to adjust for differences in exposure or multiple job holding. The need to weight for working hours raises a more general issue. Few studies have explored the OHS impact of shift schedules or particularly short, long or irregular hours in temporary work and other forms of

contingent employment. Available research highlights systematic differences between temporary and permanent workers undertaking similar work in terms of total hours, control over shift allocation and desirability/predictability of work schedules – differences that seldom amount to the win-win, ‘family friendly’ outcome portrayed by advocates of greater labour market flexibility.^{141, 184}

Second, temporary work encompasses an array of work arrangements that may vary considerably in their OHS effects. As noted above, studies of agency workers reported more consistently negative effects. Temporary work paid by the hour, without set times or leave entitlements, may have different effects to fixed-term employment for 12 months or more with similar pay and conditions to those of ‘permanent’ workers. It may also be necessary to describe the characteristics of workers employed in particular types of temporary jobs and to identify risk factors specific to them. For example, age may be a significant moderating factor, given its links to financial and family commitments, job expectations and general health.¹⁸⁵

Although most studies of the health effects of temporary employment have focused on job insecurity, there are other risk factors, such as regulatory failure, where temporary workers have greater difficulty raising OHS issues and securing their entitlements.¹⁸⁶ The concept of employment strain developed by Lewchuk and colleagues¹⁸⁷ also has relevance and provides an example of how industrial relations scholars can use their knowledge of regulatory and institutional factors to contribute to a better understanding of these effects. Reward pressures, disorganisation and regulatory failure may contribute to adverse OHS outcomes, even when job insecurity is not a significant factor, and may also explain the more consistent pattern of results for studies using safety indices than those relying on health indices. For example, contract and temporary workers are more likely to have their pay tied to a specific amount of work (including contingent pay systems like trip rates in trucking or piecework) that encourage intense and unsafe work practices. (For a recent study of the OHS effects of piecework, see Lacey et al.¹⁸⁸) On the other hand, young and inexperienced temporary workers in jobs with irregular and unpredictable hours, such as many in the fast food and hospitality industries, may be at greater risk from disorganisation and regulatory failure than the pressures arising from job insecurity.

The same may or may not apply to regionally-based seasonal workers whose work is fitted around other activities such as farming, fishing or hunting. A soon to be submitted PhD thesis on seasonal food processing workers in New Zealand¹⁸⁹ found no difference in general health outcomes (as measured by the General Health Questionnaire). However, the frequency of work-related injuries amongst temporary workers was significantly higher than their non-seasonal counterparts, suggesting that some factors that put temporary workers at greater risk of injury may act independently of those affecting health outcomes, or that health outcomes may be moderated by better options in terms of work-life balance.

Highlighting some of the complexities here, a recent study of call centre workers in Sydney¹⁹⁰ has found similar high mean General Health Questionnaire scores for both permanent and temporary workers, even though temporary employees worked an average of around half as many hours per week. On the other hand, job insecurity may assume greater significance for older workers with family commitments who are trapped in a succession of temporary jobs.

Notwithstanding qualifications, the above findings constitute powerful evidence that outsourcing and home-based work, downsizing and job insecurity, and at least some forms of temporary work have significant adverse effects on OHS. Table 6.6 (page 66) summarises the distribution of negative, mixed and positive findings within each of the three categories of work. As noted, there are gaps in knowledge about all three categories of employment, and more research is required before several outstanding questions can be answered. Nonetheless, the consistency of the findings is particularly compelling in view of the diverse range of contexts (in terms of both countries and industries), research methods and OHS indices that were represented. It suggests that existing country-specific regulatory and institutional arrangements have been bypassed or, at best, can only ameliorate

impacts. In short, new types of policy interventions may be required to address these problems, and there are grounds for seriously rethinking current trends in work arrangements and the input of industrial relations into this debate.

6.8.3 PART-TIME EMPLOYMENT

Turning to the question of ongoing part-time employment (as distinct from temporary part-time employment), a review undertaken in 2001¹⁷⁹ only identified a handful of studies, the majority of which, unlike all other categories examined, found generally positive OHS outcomes. It is important to note that many of the studies reviewed were confined to assessing health outcomes in the healthcare sector and may not be representative, given labour market conditions specific to that sector, notably the shortage of nurses.

As noted earlier, there is research suggesting that, for some groups, positive health outcomes do not necessarily mean a similar outcome with regard to safety. Multiple job holding by part-time workers also has to be recognised as another complicating factor, with a recent Australian study finding that about one-fifth of permanent part-time workers surveyed held a second job.⁴¹

6.8.4 MULTIPLE JOB HOLDING, ON-CALL WORK AND TURNOVER

Beyond the earlier reported impacts of precarious work on occupational health and safety, there is little research dedicated to multiple job holding, on-call work or turnover and OHS. There are some obvious impacts of each on OHS, though. High turnover rates often lead to poor training for workers, which can impact on OHS. Agriculture, forestry and fishing – an industry associated with high turnover rates – also has one of the highest work-related claims.¹⁹¹ Multiple job holding often leads to increased working hours, which, in turn, affects OHS, while on-call work can create stress and fatigue in the workplace.

6.8.5 IMPACT ON PERMANENT WORKERS

Some researchers have identified spillover effects whereby the presence of contingent workers increased the training, supervision and administrative workload on permanent workers.¹⁵⁵ This may not only impact on the health and wellbeing of permanent workers trying to juggle additional tasks (not factored into their workload), but can also contribute to a breakdown of OHS management practices (such as communication between workgroups or the provision of adequate training for a new task) that endangers other workers. Further, a number of studies indicate that temporary and labour hire workers receive less in-house training, both in terms of quantity and quality/intensity, with potential implications across a range of issues including OHS. (See, for example, Draca and Green.¹⁹²)

A Quebec study of education professionals (teachers and technicians) and social workers by Siefert et al.¹⁹³ found that precarious work contracts could adversely affect mental health, not only through job insecurity but also because associated changes in work organisation had negative effects on the ability of workers to do their job, take pride in their work and develop critical interpersonal relationships in the workplace. In sum, the presence of contingent workers may lead to a weakening of job competencies, OHS management practices and regulatory oversight/compliance. In her recent thesis on temporary agency workers,¹⁴ Underhill has documented numerous examples of these sorts of breakdowns, drawn from the workers' compensation records of WorkCover Victoria over an extended period. Underhill's study identified tensions/isolation in the relationship of agency and in-house

workers, and other studies^{194–196} have identified that the type of employment relationship is associated with differences in organisational commitment.

The implications of this for OHS are unknown but unlikely to be positive (see earlier discussion of disorganisation) except in terms of coping with downsizing. Clarke¹⁹⁷ has argued that the workforce diversity resulting from the growth of contingent work makes it harder for organisations to develop/retain a safety culture, while Zeytinoglu and Denton¹⁹⁸ have pointed to the disruptive effects of worker turnover amongst homecare workers. Connections have also been drawn between precarious employment, financial stress, poor work-life balance and intense work systems with burnout, high mean General Health Questionnaire scores and even suicide.^{199–202} A recent New Zealand study²⁰³ found that higher rates of suicide existed for people employed in farming, fisheries or forestry, and trades occupations. It should be noted that these occupations involve high levels of self-employment and other forms of contingent work. Such possible connections require further rigorous investigation.

Apart from Gunningham and Johnstone's two-tiered approach,²⁰⁴ most of the measures just mentioned take little, if any, account of how work and workplaces have been reshaped, the fracturing of production and service provision utilising elaborate domestic and international supply chains, and an equally fractured labour market (utilising self-employed subcontractors, agency workers, direct hire temporary and permanent employees, fixed-term and on-call employees as well immigrant and temporary resident foreign-born workers such as students, backpacker tourists and guestworkers). There are some exceptions, though this activity is fragmented and mostly directed towards safety rather than health hazards. For example, in the USA, the introduction of a safety management process followed disastrous petrochemical incidents in the 1980s where it was recognised that the use of contract workers without adequate induction, training or supervision was a contributing factor.²⁰⁵ Similarly, the introduction of the internal control regulation in Norway was, in part, inspired by problems of control of subcontractors in the offshore oil industry.²⁰⁶ In France, a parliamentary inquiry into the disastrous explosion and fire at the AZT chemical factory in Toulouse recommended that a ban be placed on multi-tiered subcontracting in 'Seveso' high-hazard workplaces.²⁰⁷ This recommendation sparked opposition and was not adopted, highlighting the importance of evidentiary contributions to policy debates.

6.9 RESEARCH AND SURVEILLANCE NEEDS

Earlier sections of this report identified a number of externalities and policy challenges posed by the growth of flexible work arrangements as well as changes to working hours. It needs to be stressed that, while it is useful to isolate particular changes at work in order to explain these changes and examine their effects on health, in many cases, various forms of change interact (such as the concentration of both immigrants and young workers in temporary jobs). This also needs to be recognised when attempts are made to chart these changes or to devise policy interventions. Some researchers have pointed to the interconnection in health effects and contributory factors. For example, changes to work hours, work arrangements and work intensity can impact on work/non-work conflict. A recent study¹⁵⁷ found the exacerbation of work/non-work conflict was the result of high workload pressure, long working hours, unsupportive management and weak employee control (especially with regard to workload and taking time off).

6.9.1 PRECARIOUS WORK

There is little to no statistical data available on non-standard and precarious work, which makes it difficult to assess the impact of this type of work on OHS. International literature suggests that employees in casual and precarious work are far more susceptible to workplace injury than those who are employed in full-time fixed

positions. An adequate assessment of the relationship between OHS and precarious work, and the regulatory implications of this development, requires nationally collected statistical information. The need for improved statistical information on non-standard and precarious employment has been noted by several New Zealand researchers in this area.^{159, 208}

One implication of the growth of precarious employment warrants particular attention. This is the way in which the growth of temporary work, subcontracting, multiple job holding and rounds of downsizing undermine the capacity to identify exposure to hazardous substances within the working community. Tracing exposures is often already a difficult task, given multiple points of exposure (in and outside the work context), multiple exposures (to a range of chemicals within a particular workplace, some combinations having synergistic effects) and linking an exposure to a particular employer if the worker has changed jobs. However, as noted by both Leigh and Quinlan (in Peterson and Mayhew²⁰⁹), these problems are magnified in a more flexible and volatile labour market because many temporary workers will change jobs/tasks, employers and even occupations on a regular basis. For example, it was estimated the average worker in the USA would have held 14 jobs before they reach the age of 35.²¹⁰ This will make it virtually impossible to undertake cohort studies to trace exposures over time in industries with a high proportion of temporary workers or provide targeted medical diagnosis and treatment to affected workers. The situation would be especially acute with regard to many labour hire workers. Repeated rounds of restructuring/ downsizing by large employers mean that it may be difficult to trace exposures even to ‘permanent’ workers.

Multiple job holding by temporary and part-time workers accentuates this problem, as does subcontracting. As Thébaud-Mony’s study²¹¹ of the French civil nuclear industry indicates, even where high-hazard employers are required to keep exposure records (in this case, in relation to radiation), this might not extend (or extend in a regulatory sense) to subcontractors, who are not considered part of the core workforce. Further, Thébaud-Mony found casual workers were engaged in high-risk tasks, so that they actually received 80 per cent of total irradiation exposures. Some self-employed subcontractors, or those working for small subcontracting firms (like tradespeople and heavy machinery operators), may move from worksites marked by a wide diversity of potential chemical exposures. The situation is further complicated by the multi-employer worksites that arise as a result of subcontracting – including limited communication as to exposures or potentially hazardous materials located near where work is occurring – something that has also led to serious incidents and increasingly elaborate international supply chains (and the offshoring of hazardous activities).

The major challenge just described has received limited recognition from policy makers or, indeed, prior reviews of the OHS implications of workplace change. Research methods used by public health epidemiologists to track health outcomes amongst disparate and transient groups (such as immigrant communities) also warrant attention as a way of meeting this problem. Nevertheless, it needs to be recognised that the challenge is considerable, given the scale of change in work arrangements in New Zealand and other countries.

Since 2001, there appears to have been relatively few new studies to shed light on issues in relation to part-time work. Overall, there is a need for further research into the OHS effects of ongoing part-time work, including the potentially beneficial effects, across a range of occupations.

6.9.2 OCCUPATION SAFETY AND HEALTH REGULATORY FRAMEWORK

The occupational safety and health regulatory framework is largely designed to deal with the permanent workforce in large organisations, rather than those engaged in casual, temporary and precarious forms of employment. A similar point has been made by regulatory researchers in Australia and other countries (see, for example, James et al.²¹²). In 2001–02, WorkCover New South Wales – the OHS inspectorate and compensation authority – commissioned an Australia-wide report on identifying and meeting the regulatory challenges posed by changing

work arrangements.²¹³ Some general observations on the limitations of existing OSH regulation in dealing with these issues can be made. The report has not been publicly released, although considerable parts have been published. Other Australian state agencies have gained access to the full report and so there is no reason why it shouldn't be made available to New Zealand.

Like Australia and many Canadian provinces, New Zealand adopted OHS legislation modelled to some degree on the Robens report.¹ The post-Robens laws also gave wider powers to OHS inspectors and a new range of remedies, improvement and prohibition notices and, more recently, enforceable undertakings and infringement notices. Finally, another important area of change was the requirement to consult with and involve workers, most notably, though not exclusively, through workplace health and safety committees and health and safety representatives.

In some respects, these laws were better suited to address the challenges of a changing labour market. For example, the general duty provisions encompass a wide range of parties (manufacturers, suppliers and designers as well as employers and workers) and address work organisation/processes. The duties also accommodate change in work, even requiring employers to explore and, if need be, address any OHS implications of a change in work processes. Further, inspectorates can produce guidance material and codes that either specifically address changed work arrangements (such as codes on labour hire) or incorporate this material (such as guidance material on occupational violence that refers to staffing levels).

On the other hand, as noted elsewhere in the report, in practice, the activity in this regard has, notwithstanding some outstanding initiatives, been fragmented and reactive. Moreover, the growth of insecure and flexible work arrangements has undermined avenues of worker involvement and the input of unions,²¹⁴ weakening key elements of the legislative compact and making it more difficult to address these very issues. Again, while some agencies have responded to this, the weakening of collective industrial relations regimes has made this task more difficult, as well as throwing additional burdens on OHS agencies in relation to minimum labour standards such as working hours and payment systems.

It is suggested that a reconsideration of the current OSH regulatory framework be undertaken to consider precarious workers.

SECTION SEVEN

IMPACTS OF TECHNOLOGY

ON WORK



The impact of information and communication technology on the world of work is widely recognised as being significant, but technological advances in other areas such as the physical and biological sciences have also been important. Understanding the effects of emerging technological changes requires bringing researchers from many disciplinary areas together. Integration of insights from different disciplines is, however, rare.ⁱⁱ In perhaps no other field is the effect of these advances as poorly understood as in the field of OHS. Understanding the complex interactions between technological advancement, the changing nature of work and its implications for OHS is beyond the scope of this project. There is, however, a need to give some consideration to the dynamic that technological change is having on work organisation and for existing and emerging OHS risks.

This chapter examines, at the broadest level, the different ways technology is likely to impact on both workers and the organisation of work itself. The chapter will briefly outline the broad emerging areas of concern with regard to OHS and technological advancement with a view to highlighting the issues that will need further research evaluation in the future.

Most of the analysis of how new technology affects the production and distribution of goods and services is confined to an examination of socio-technical systems and the impact of continuous process technologies on work organisation and the labour process. Across the labour market, however, technological innovation has become structurally embedded in the capitalist economy – significantly affecting labour demand.²¹⁶ For instance, the IT revolution of the past 20 years could be considered as structurally influential as the industrial revolution of the 18th century. The industrial forces that brought workers together in large factories in the 18th century may be equivalent to the IT forces that drive workers apart in the current times. Debate around these tendencies and counter tendencies is intense. We do not take a position on these matters. Rather, our analysis is informed by an understanding of issues identified in this debate.

The remainder of the chapter is structured as follows: the next section looks at the IT revolution and its impact on work; a brief but suggestive section on biotechnology and nanotechnology follows, after which we report comments from our key informant interviews; the chapter concludes with some suggestions about likely impacts on existing and emerging OHS risks, as well as surveillance needs.

7.1 INFORMATION TECHNOLOGY – WHITE AND BLUE COLLAR WORK

Information technology (IT), in its most basic sense, can be understood as computer-based information systems for the storage and retrieval of data. The impact, then, of IT on white collar workers is apparent. IT has helped to improve productivity by making previously manual tasks (typing, filing, and data and information storage, retrieval and manipulation) highly automated. In addition, technological advancement has brought about global connectivity with developments in telecommunications allowing real-time interaction around the world.

These improvements in IT and productivity have had a significant impact on occupational structure. The demand for professionals, in IT but also in other sectors, has increased virtually at the same rate as technological advancement.²¹⁵ Commensurate with this, however, has been a significant decline in clerical workers, as noted earlier in this report. In 1993, the largest occupational group was clerks, while, in 2006, the largest occupational group was professionals (see Table 7.1). For example, in the banking sector, increased reliance on innovative information technology such as internet and telephone banking has reduced the need for front-end, customer service oriented staff whilst increasing the need for account managers and auditors. These occupational shifts have occurred as industrialised countries, such as New Zealand, have developed a more highly-skilled workforce. Commonly referred to as ‘knowledge economies’, these countries are increasingly being defined less by manual work and more by work based on exchanges of information and knowledge.

ii For an example of one attempt to do this integrative type work, see Karoly and Pinis.²¹⁵

The knowledge economy, which has been advanced by increased use of IT in the workplace, creates a demand for more skilled labour. Up-skilling the labour force is a priority in New Zealand policy. These labour market changes, however, have had a significant effect on work organisation. Hours of work have increased as job roles have expanded and principles of efficiency and economy have led to workforce reductions. Work intensification has also been affected through extended hours of operation – outside the normal 9 am to 5 pm that, in white collar industries, has been compounded by the growth in international markets and the need to work across different time zones.

Another impact of the increased use of IT in white collar work is what Towers, Duxbury and Thomas²¹⁷ refer to as ‘work-extending technology’. This refers to the way that laptops, PDAs and even mobile phones are facilitating the destruction of barriers between work time and personal time. This concept, in particular, is discussed in greater detail in the section on excessive work hours and in the section on working from home.

TABLE 7.1 Growth in labour skill ⁱⁱⁱ between 1993 and 2006 ¹⁸			
	Year ending March 1993 (000)	Year ending March 2006 (000)	Proportion growth %
Highly-skilled	385.2	586.0	52.1
Skilled	313.8	452.8	44.3
Semi-skilled/elementary	251.2	310.9	23.8

In the blue collar labour market, technological advances have also had significant impact on production processes in manufacturing, mining, construction and agriculture and on the distribution of goods and services in the transport, warehousing and logistics industries. The changing nature of work and its OHS implications have been widely recognised and studied in these areas.

Negative implications have been suggested for two groups of New Zealanders. In rural regions, the cost of initial capital outlays required to keep pace with the technological advancement of competitors has proven restrictive. The OHS implications of this have been noted with regard to increased stress and mental health-related issues, as industries and businesses collapse. The other group significantly affected by new technology are older people without the same technologically-based skill sets as younger workers entering the workforce. Older workers, whose core skill set may have become obsolete as technology has replaced manual skills, also suffer from the same mental health issues that are exacerbated by associated barriers to changing occupations and declining levels of blue collar work.

The decrease in people employed in the agriculture, forestry and fishing industries over the past 15 years is most likely due to increased use of mechanised technology. Increased mechanisation has also led to a decrease in demand for semi-skilled workers. In 1991, 112,300 men and 36,900 women were employed as agriculture and fishery workers. This decreased to 106,200 men and 33,500 women in 2006. However, while it is evident that, with New Zealand’s low unemployment rates, these semi-skilled employees are finding work elsewhere, the adequacy of retraining needs to be considered, particularly with regard to OHS risks, and particularly given the consistent advances in technology in other sectors.

7.2 NANOTECHNOLOGY AND BIOTECHNOLOGY

The emergence of technology beyond the field of information technology has been a marked feature of the late 20th and early 21st centuries. Nanotechnology involves creating and/or manipulating matter at the atomic level. While nanotechnology is still in its infancy, it is being used in a number of different fields including, but not limited

iii The Department of Labour categorises ‘highly-skilled’ as managers and professionals; ‘skilled’ as technicians/semi-professionals and trades workers; and ‘semi-skilled/elementary’ as clerical, agriculture and fishery, service and sales, operator/assembler and elementary workers.¹⁶⁴

to, biology, chemistry, physics, engineering and electronics. New Zealand has a cluster of organisations working with nanotechnology, including universities, dedicated nanotechnology research centres and other institutions. The potential benefits of nanotechnology are being widely espoused – molecular genetic advances are at the forefront of both biotechnological and nanotechnological advancements, but there are also potential applications in photovoltaics, molecular electronics and various manufacturing technologies.²¹⁵ However, OHS regulations or even practices, exposure levels, or latency affects with regard to working with nanotechnology, in particular, are non-existent. There is, however, significant and growing concern amongst OHS experts around the absence of any OHS information or regulation in this field.²¹⁸

In a report to New Zealand's Minister for the Environment, the Bioethics Council notes the lack of awareness surrounding the knowledge of safety of nanotechnology. The report also notes that, in the absence of testing for health, safety and environmental impacts of nanotechnology, a moratorium on synthetic nanomaterials being manufactured has been called for.²¹⁹ The US health and safety agency, NIOSH, has published a guideline⁴³ to working with nanotechnology. This guideline, though still in draft form, suggests the most hazardous form of nanomaterials is when they are in the gas, power or slurries/suspensions/solutions phase. Safety is most at risk when there is skin exposure to or inhalation of nanomaterials.

Biotechnology uses the cellular, subcellular or molecular components of organisms to modify the genetic structure of plants, animals or microorganisms. Although biotechnology was initially concentrated in the field of medical advances, its applications now in the agricultural and manufacturing sectors are increasing.²¹⁵ While there is considerable debate around the moral, ethical, religious and privacy issues associated with biotechnology, its potential environmental impact is a field that should be closely associated with the monitoring of the potential health and safety risks to individuals.

7.3 KEY INFORMANT INTERVIEWS

Key informants were somewhat divided in their views over the issues associated with new technologies. A number of them commented that the expansion of the New Zealand economy offered important opportunities for renewal of productive infrastructure and investment in new technologies. Prominent qualifications to this enthusiasm included concern at the extent to which importation of second-hand equipment was being applied to meet the renewal requirement. The provenance of this imported plant, in terms of its maintenance history, and the extent to which it lagged behind best practice in current design standards, were chief among these concerns. Some key informants indicated that closer collaboration between occupational health and safety and customs functions may be needed.

The key informants also reflected upon the importance of the adoption of 'safe design' as a defining principle in respect of all building, workplace design, plant and equipment. One commentator closely affiliated with the building and construction sector observed a gradual move towards emphasis upon designing for safety in that industry. This set of comments included an appreciation of the issues raised in the EASHW report⁹ concerning the need for closer attention to the interface between increasingly sophisticated operating systems for plant and the capability and physical capacities of operators.

With regard to specific hazards, the key informants most often cited the opportunities to address hazards associated with noise and vibration, both jointly and separately, through improved design and engineering. Several informants noted their disappointment that the growth in the New Zealand economy had not been accompanied by a sufficiently widespread effort at renewal of plant and equipment. They observed that the renewal was 'patchy' between industries and between larger operators and SMEs within industries.

Finally, eyestrain from IT usage was an issue raised in key informant interviews.

7.4 IMPLICATIONS FOR EXISTING AND EMERGING OHS RISKS

7.4.1 WHITE AND BLUE COLLAR WORK

One of the results of advances in technology is the reduction in physical activity that has occurred in the workplace. This has resulted from a move from physical labour as the primary basis of work, to information as the primary commodity exchanged. As Philipson and Posner²²⁰ so accurately surmise, “in an agricultural or industrial society, work is strenuous; in effect, the worker is paid to exercise”. The decline in New Zealand of agriculture and fishery workers is evidence of this move from physical labour as a form of work, while the increase in managers and professionals is evidence of the increase in sedentary work. The rise of information technology in the workplace could be seen as evidence of this shift.

The relationship between reducing physical activity and technological advancement can result in a number of different health risks, the most obvious being obesity. Philipson and Posner²²⁰ give three main reasons why today’s workforce has reduced activity and increased obesity. Firstly, they see a direct relationship between the trend in increased working hours and the trend in increased obesity (longer working hours means less time to exercise, and exhaustion from work may reduce the desire to exercise). Secondly, they go so far as to say that obesity is not discouraged by employers, as the advancement of technology does not require fitness of employees to use it. Finally, they see the shift in work from manufacturing and mining to service-based work, which involves mostly light work, as a factor contributing to obesity.

The relationship between obesity and reduced physical activity in the workplace is complex. Research conducted in Australia found a direct relationship between occupational sitting time and incidence of obesity, particularly for full-time employed males.²²¹ Other research goes so far as to say that work-related physical activity has no bearing on obesity and body mass index, and questions the widely held conception that the automation of the workplace has contributed to growing levels of obesity.²²²

According to the Public Health Association of New Zealand, “advances in technology, safety concerns, a built environment that prioritises mechanised activity, and time pressures are all factors in this reduction [of physical activity]”.²²³ Of primary importance in the workplace is increased mechanisation in primary industries, and the advancement of technology in the office setting. As the World Health Organisation²²⁴ states, “technological advancements are prominent in worksites, including photocopiers, elevators, computers, and e-mail, and these time and energy saving devices have drastically reduced the habitual level of physical activity accumulation in a normal working day, particularly amongst professional and white-collar occupations”.

Another side effect of increasing obesity levels is the implications it has for workers in the healthcare and related occupations. A US study found that lifting injuries in nurses have increased due to the growing levels of obesity in patients, leading to muscular-skeletal injuries and disorders. This can, but is not always, mediated by the use of lifting devices; however, the research concludes that either a ‘no-lift’ policy or training nurses in body mechanics may be a solution to this problem.²²⁵ While there are no studies released as yet, obesity can impact on the safety of other occupations, including mortuary workers, ambulance officers, homecare workers and other occupations involved with lifting and moving people.

While the focus in this section has been on how reduction in physical activity leads to obesity, the effect of IT on creating highly repetitive physical activity is widely recognised. Strain and repetitive injuries, such as carpal tunnel syndrome and repetitive strain injury (RSI) caused by increased usage of IT, are well documented and understood with regard to the implication for OHS. As such, there are a number of solutions that are being implemented in workplaces. These include the Dvorak keyboard, speech recognition software and software limiting the amount of

time IT software is used before switching to 'rest time' in order for muscles to rest. The continued prevalence of these forms of muscular-skeletal injuries, however, warrants continued monitoring. In particular, the potential interaction between different forms of muscular-skeletal injuries and obesity needs to be considered.

7.4.2 MECHANISATION

Research into mechanisation of the forestry industry in New Zealand indicates that mechanisation has not had the OHS benefits expected of it. While mechanisation was once heralded as a way in which employees would no longer have intense physical workloads, lack of training and large turnover rates have meant that the ergonomic benefits of mechanisation have not been realised. Further, new OHS risks have emerged, with machine operators suffering increased neck and shoulder strain injuries from undertaking monotonous and repetitive work.²²⁶ Though this research focuses on forestry workers, the findings are applicable to other industries such as manufacturing and are particularly pertinent to occupations such as machine operators.

7.4.3 COMPLEXITY OF TECHNOLOGY

The EASHW report⁹ (which examined emerging physical risks) raised, as a significant concern, the interface between the sophisticated computer enhanced functionality of a variety of equipment and machines, and operator attention and response. Of particular concern was that confusion, disorientation and fatigue effects may increase the exposure to conventional hazards associated with plant and equipment for both operators and bystanders.

While complexity of technology may be seen to negate its usability, with it being seemingly apparent that users of complex technology are more likely to risk injury, it may not be this simple. Certain types of technology may become simpler to use as they become increasingly complex. The design of PCs, for example, has integrated human psychology and human behaviour into their complex operating systems. Physical interaction and cognition of experience make the human-computer interaction simpler, which ultimately decreases risk of injury.²²⁷

7.5 RESEARCH AND SURVEILLANCE NEEDS

The impact of technology, and, particularly emerging technology, on the nature of work is vast. Technology has facilitated increases in production, changed work practices, altered the skill structure of the workforce, led to wage restructuring as the workforce becomes more highly-skilled, transformed organisational structures, reduced distances both between workers and the organisation and between organisations through advances in communications, and delivered different modes of learning and training.²¹⁵ The research and surveillance required to monitor these changing work practices are discussed in detail in other chapters of this report.

Of particular concern, however, with regard to OHS, are the break-through areas of technology in emerging fields such as nanotechnology and biotechnology and the limited extent to which there is any monitoring of potential risks and hazards. Research by leading nanotechnology researchers in the US has recommended five strategies for developing safety guidelines for the use of nanotechnology. The most immediate is to develop programmes that enable relevant risk-focused research, while longer-term strategies include developing instruments to assess air and water exposure, developing methods to evaluate the toxicity of engineered nanomaterials, developing prediction models for potential impacts on human health and the environment, and developing systems to predict the impact of engineered nanomaterials over their entire life.²²⁸ While it is not recommended that New Zealand take up this research agenda, it is recommended that a watchful eye be kept on international research into safety guidelines for nanotechnology.

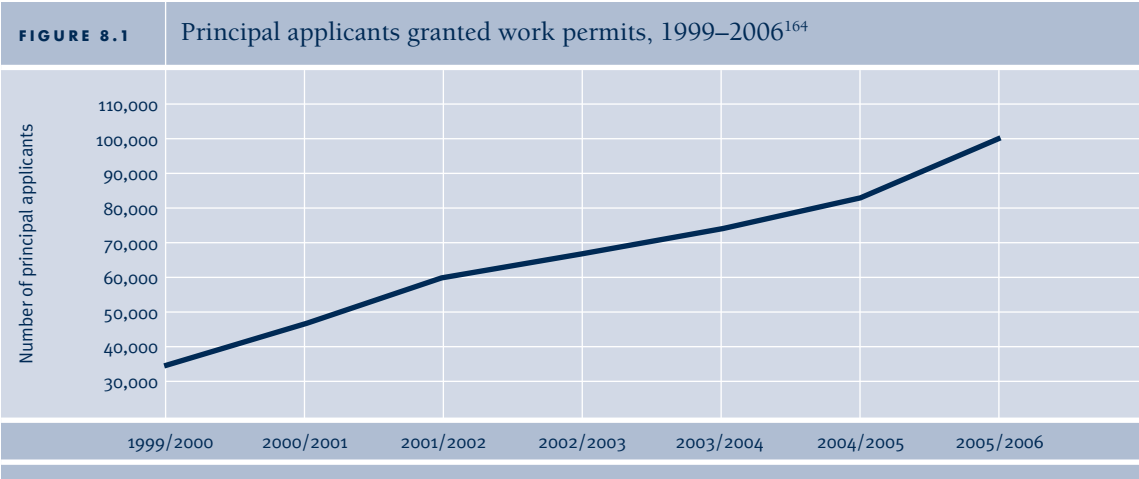
CHANGING JOB PATTERNS



Job patterns in New Zealand are as organic as the labour market itself. In Chapter 7, we saw that technology has impacted on New Zealand’s workforce. The impacts of IT, increased mechanisation and the complexity of technology all drive a different demand for labour than in the past. The changing occupation and industry structures that we saw in Chapter 3, and the changing demographics of the workforce that was evidenced in Chapter 4, all contribute to the changing structure of jobs. This chapter will begin by looking at the different ways jobs structures have changed over the past 15 years.

8.1 MIGRANT WORKERS

In 2005/2006, 99,674 work permits were issued in New Zealand, an increase of 21 per cent from 2004/2005.¹⁶⁴ This has been credited to an increase in working holiday makers, the piloting of a seasonal work permit scheme and an increase in work permits issued for a specific purpose or event. Yet there is also an increased trend in the number of work permits issued over the past 10 to 15 years. Figure 8.1 displays the number of applicants granted work permits from 1999 to 2005.



8.1.1 SKILLED MIGRANTS

The need to attract migrant workers to New Zealand has been an important part of labour policy for many years now. In line with international trends, New Zealand’s high rate of employment is creating skill shortages that need to be filled by employing migrant workers. Similar to the increase in general work permits, labour market tested work permits (which are aimed at filling skill shortages where no New Zealanders are available to do the work) have increased from 13,586 in 1999/2000 to 29,503 in 2005/2006.¹⁶⁴ While the actual number has more than doubled, however, these permits for skilled migrants have decreased from 40 to 30 per cent as a proportion of total work permits granted. A report released for the Belmont conference¹⁹ on trends in New Zealand’s labour market argues that skilled immigration outweighs skilled emigration and is contributing to a more highly-skilled workforce:

“Migratory flows have... contributed to raising average skill levels. The skill profile of immigrants tends to be higher than that of the workforce as a whole largely due to the skill-biased selection procedures for immigration into New Zealand. In contrast the skill profile of emigrants tends to be similar to the overall profile of the New Zealand workforce. Consequently the net effect of immigration and

emigration is a gain of skilled workers and a loss of semi-skilled and unskilled.^{iv} Between 1992 and 2005 New Zealand has gained about 24,000 skilled workers and lost about 17,000 semi-skilled and unskilled workers through net migratory flows.”

While this is consistent with what we have seen in Chapters 3 and 6 on the increase in skilled workers in New Zealand, the argument does not hold up strongly. Analysis of overall migration patterns shows that many skilled migrants do not enter New Zealand permanently and that the majority of migrants who enter under a skilled worker or business visa spend long periods outside the country and have a high rate of non-return.²²⁹ Research by the Department of Labour also indicates that migrants to New Zealand are more likely to remain and become permanent citizens if they arrive on humanitarian or family visas, than if they arrive on working visas. Therefore, the assertion that the skill level of New Zealand workers increases through emigration and immigration patterns is not viable over the long term. However, the contribution that skilled/business migrants make during their stay in New Zealand (however long) should not be overlooked.

Table 8.1 below displays the occupational groups of labour market tested work permit holders. The largest proportion of permit holders go into professional (highly-skilled) jobs, while a large proportion also go into service and sales, and agriculture and fishery (semi-skilled) work.

TABLE 8.1 Occupational groups of labour market tested work permit holders ¹⁶⁴		
Occupation	N	%
Professionals	5,392	19
Service and sales workers	4,806	17
Agriculture and fishery workers	3,806	14
Technicians and associate professionals	3,649	13
Legislators, administrators and managers	3,261	12
Trades workers	2,624	9
Elementary occupations	1,974	7
Plant and machine operators and assemblers	1,474	5
Clerks	863	3

8.1.2 TEMPORARY/SEASONAL MIGRANTS

As well as skilled migrants, New Zealand has opened up its labour market to temporary migrant workers to deal with seasonal labour shortages in key horticultural regions.²³⁰ Such shortages have led to policies such as the seasonal labour migration scheme, aimed at attracting seasonal workers. In 2005, the Recognised Seasonal Employer (RSE) work policy was directed at horticulture and viticulture sectors, in essence, opening them up to migrant seasonal workers. Often jobs that are available to these workers are temporary and therefore subject to the same OHS issues as discussed previously in the section on temporary work (Chapter 6).

iv ‘Skilled’ workers refer to managers, professionals, associate professionals, technicians and trades workers, while ‘semi-skilled and unskilled’ refer to all other major occupational categories.

8.1.3 WORKING HOLIDAY MAKERS

Finally, working holiday makers contribute to New Zealand's economy through work and tourism. In 2005/2006, 28,540 (slightly fewer than the number of labour market tested work permit holders) were issued working holiday maker permits. This work may be carried out for up to 12 months and must be of a temporary nature. Once more, as this group are primarily hired for casual and temporary positions, OHS issues are highlighted in the section on temporary work (Chapter 6).

8.2 OFFSHORING OF JOBS

With New Zealand's unemployment so low and skill shortages so high, offshoring jobs is considered a good business strategy. While it is not happening to the extent that it is in Australia or the US, it still exists. In 2007, the Yellow Pages group moved its call centre from Palmerston North to Manila. This followed the movement offshore of manufacturing operations of key (and sometimes iconic) New Zealand firms such as Macpac, Icebreaker and Bendon. There is no repository of information on how many jobs are offshored by New Zealand companies; therefore, it is hard to deduce the impact that offshoring currently has, and may have in the future, on OHS.

Offshore jobs are generally low-skilled, for example, manufacturing and service jobs. Two examples are the manufacturing boom in Taiwan during the 1990s and the current call centre boom in Hyderabad, India. Though offshoring is not confined to these two industries, they do highlight the general tendencies of offshored jobs – they are often back end (i.e. manufacturing) and low cost. It could be argued that, with New Zealand's economic and employment boom of the past decade, offshoring jobs allows the low-skilled workers who would have been employed a chance to up-skill and work in more highly skilled roles.

8.3 SMALL AND MEDIUM BUSINESSES

New Zealand defines small and medium businesses as those employing under 20 people²³¹ in line with Australasian definitions.²³² However, according to this definition, 96 per cent of businesses should be considered small (see Table 8.2). However, 63 per cent of businesses in New Zealand do not have any employees (i.e., sole traders), and for the purposes of this discussion, small business will be considered those that employ at least one but less than 20 people.

TABLE 8.2	Number of enterprises by enterprise size, 2000–2006¹⁷						
Employees	2000	2001	2002	2003	2004	2005	2006
0 N	172,647	169,966	174,618	182,696	209,772	211,171	219,964
0 %	62.8	62.0	62.1	61.9	64.7	63.2	63.6
<20 N	92,000	93,486	96,004	100,805	102,633	110,891	113,776
<20 %	33.5	34.1	34.1	34.2	31.6	33.2	32.9
20+ N	10,333	10,571	10,778	11,515	11,953	12,341	12,415
20+ %	3.8	3.9	3.8	3.9	3.7	3.7	3.6
Total	274,917	273,961	281,338	294,954	324,293	334,340	346,091

As Table 8.2 displays, there has been no real move in the relative proportions of small and large businesses between 2000 and 2006, with small businesses accounting for approximately one-third of all New Zealand enterprises. Similarly, there has been no major shift in the number of employees employed by business size, as is shown in Table 8.3.

TABLE 8.3	Number of employees by enterprise size, 2000–2006¹⁷						
Employees	2000	2001	2002	2003	2004	2005	2006
o N	0	0	0	0	0	0	0
o %	0	0	0	0	0	0	0
<20 N	412,470	423,180	437,370	468,860	479,220	512,840	522,200
<20 %	29.0	28.7	29.0	29.5	29.2	29.7	29.6
20+ N	1,007,000	1,049,820	1,070,610	1,118,510	1,163,070	1,215,150	1,243,240
20+ %	70.9	71.3	71.0	70.5	70.8	70.3	70.4
Total	1,419,460	1,472,990	1,507,990	1,587,360	1,642,290	1,727,990	1,765,440

Table 8.4 displays the distribution of small businesses by industry, a distribution that has remained stable over the last decade. The greatest growth is in property and business services (3 per cent, which equates to 6,307) and construction (2 per cent, which equates to 5,247). The retail sector has decreased as a proportion of small businesses by 3 per cent, although it has still grown by 1,554 enterprises.

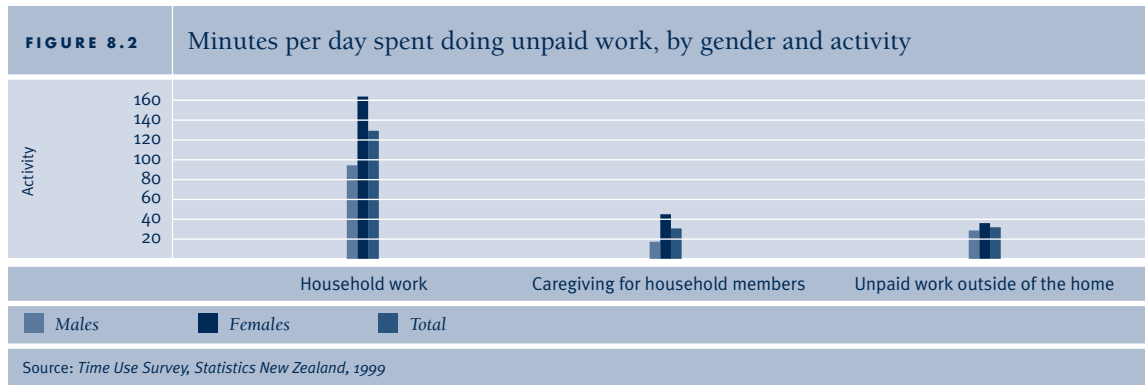
TABLE 8.4	Distribution of small businesses by industry, 2000 and 2006¹⁷		
	2000	2006	% change
Agriculture, forestry and fishing	2.8	3.0	0.2
Mining	0.2	0.1	-0.1
Manufacturing	10.6	9.3	-1.3
Electricity, gas and water supply	0.0	0.0	0.0
Construction	12.3	14.6	2.3
Wholesale trade	7.4	6.9	-0.5
Retail trade	20.2	17.7	-2.5
Accommodation, cafés and restaurants	6.2	6.4	0.2
Transport and storage	4.3	3.9	-0.4
Communication services	0.7	0.6	-0.1
Finance and insurance	1.6	1.8	0.2
Property and business services	15.0	17.7	2.7
Government administration and defence	0.0	0.0	0.0
Education	3.4	3.3	-0.1
Health and community services	6.3	5.7	-0.6
Cultural and recreational services	3.2	3.0	-0.2
Personal and other services	5.8	6.0	0.2

8.4 UNPAID WORK

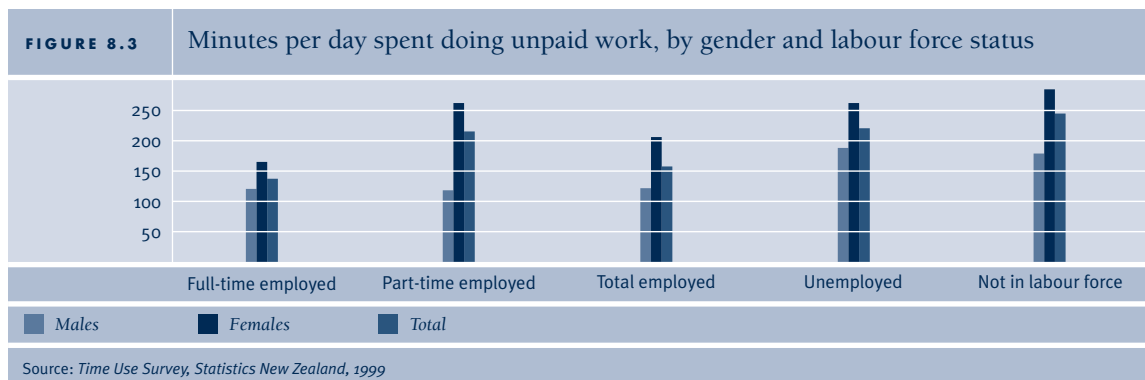
Unpaid work has already been discussed earlier in this report but it is worth returning to the subject to identify a number of important policy issues. Unpaid work may take on a number of forms – all important – with consequences for OHS. First, unpaid household work at home (predominantly by women) is critical to sustaining paid work, but there is evidence of a growing imbalance between work and non-work life, despite some shifting in gender activities. The health impact of this is likely to fall on women trying to juggle work and family demands, particularly where availability of quality affordable childcare is limited.

8.4.1 GENDER AND UNPAID WORK

According to the 1999 Time Use Survey,^{iv} New Zealanders can expect to do 4.2 billion hours of unpaid work over the course of a year. Broken down, this is roughly divided into 2.7 billion hours of unpaid work by women and 1.5 billion hours by men.⁸⁶ Findings from the survey indicate that, regardless of the type of unpaid work done, women spend more time participating in unpaid work than their male counterparts (see Figure 8.2).



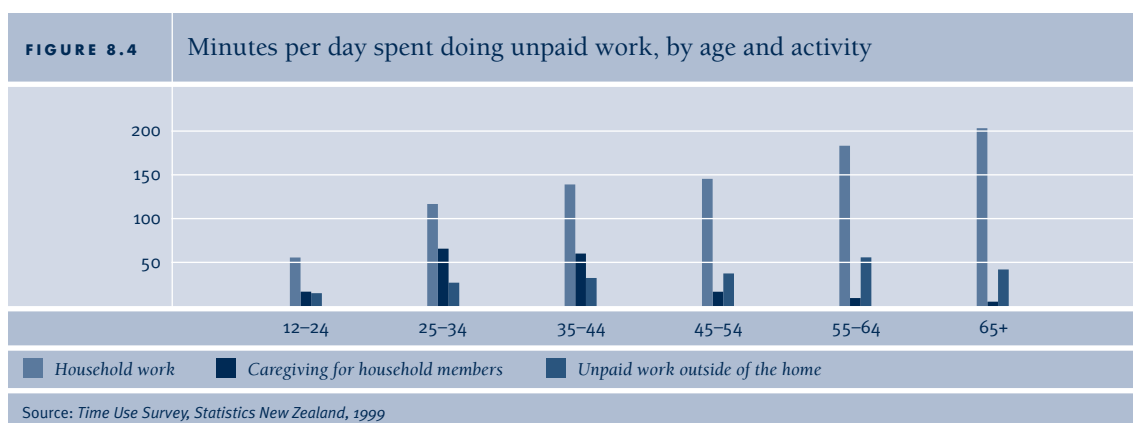
Women spend more time in unpaid work regardless of whether women work full-time or part-time, are unemployed, or are not in the labour force (see Figure 8.3).



8.4.2 AGE AND UNPAID WORK

There are obvious trends when different unpaid work activities are looked at by age (see Figure 8.4). The amount of household work done in a day increases with age, as does unpaid work outside the home (volunteer work). However, caregiving for household members is primarily done by those aged 25 to 44, which can be attributed to caregiving for children, as these are the child-rearing years.

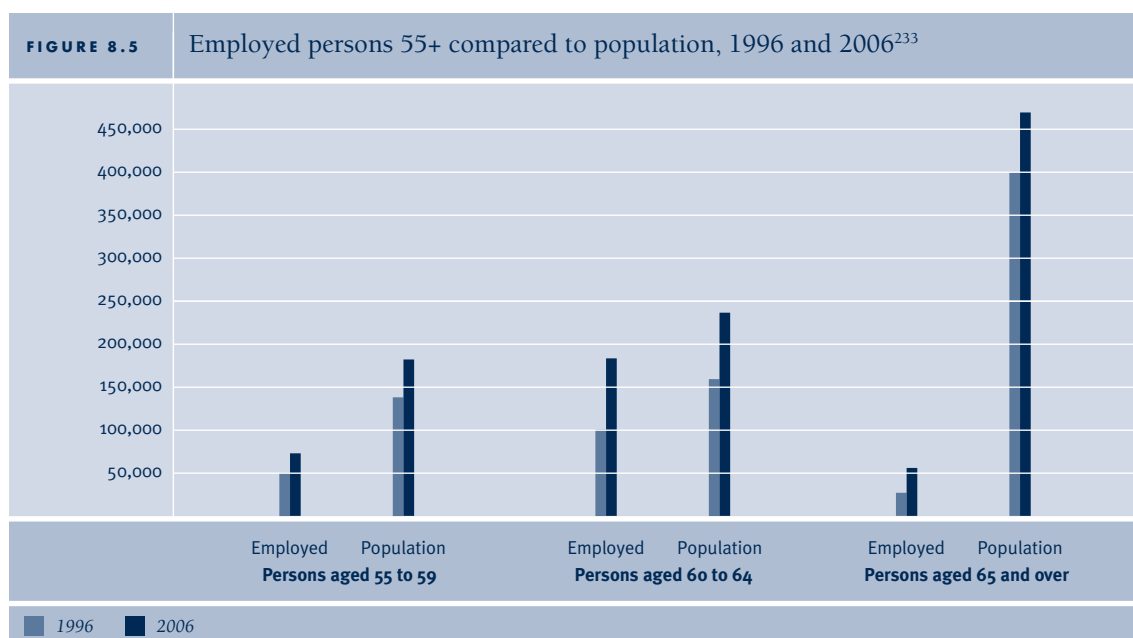
iv The main source of data in New Zealand on unpaid work is the 1998 Time Use Survey. Though this is now a decade old, the findings are consistent with expected current outcomes. However, it should be noted that changes in labour force participation over the past ten years may affect the findings of paid/unpaid work from this survey. A planned repeat of the survey in 2008/09 will provide the opportunity to test this proposition.



8.5 DELAYED RETIREMENT

An increased demand for labour supply has forced the New Zealand government to consider how to increase labour force participation. Policy changes such as the abolition of compulsory retirement and the raising of the eligibility of superannuation to 65 appear to have worked for New Zealand, with an increase in people over the age of 55 remaining in employment.

In Chapter 4, we saw that there has been an increase in older workers in New Zealand. Figure 8.5 shows that, between 1996 and 2006, the population in the older age groups (55–59, 60–64 and 65+) has increased, as has the number of people employed. This indicates that, as well as the population ageing, people are delaying retirement and remaining in the workforce. Analysis by Statistics New Zealand projects that people aged over 65 in employment will treble from an estimated 38,000 in 2001 to 118,000 in 2026.²³³

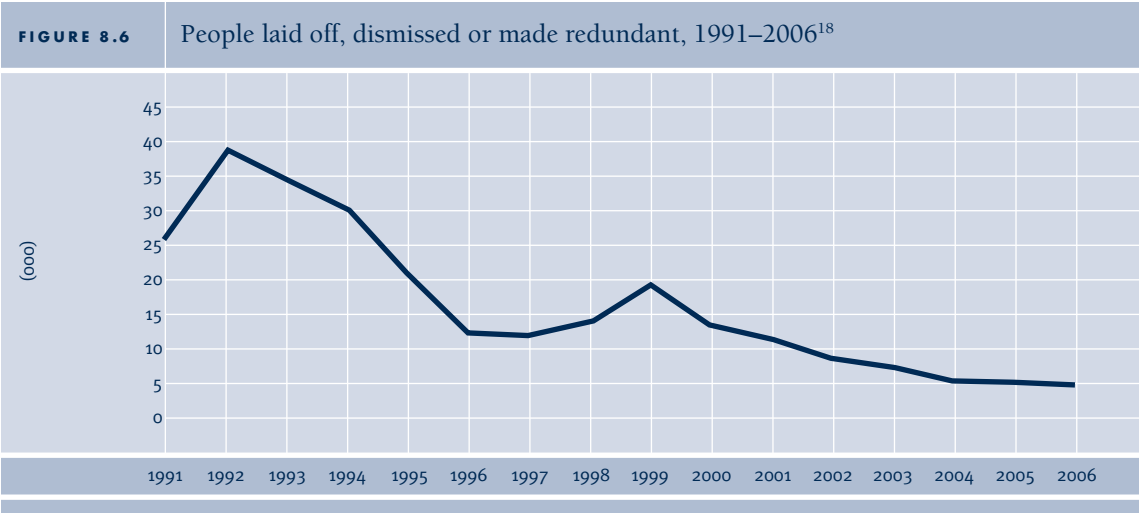


While delayed retirement is assisted by these policy changes, other factors may contribute to the decision of individual workers to remain in employment. In some cases, employees may have the choice to retire or to remain in the workforce; in other cases, employees may be forced to do one or the other, despite their personal preference. For example, people may choose to retire in order to have increased leisure time, or they may be forced to – for

example, where poor health makes it difficult for an employee to continue working. Likewise, reasons exist for employees to remain in the workforce. Employees may choose to remain, as they gain satisfaction from work and enjoy spending time with colleagues, or they may be forced to, as financial constraints may mean they are unable to fund retirement.

8.6 REDUNDANCY

While there is little research available on redundancy in New Zealand, it appears that redundancy has decreased over the past 15 years. Figure 8.6 shows the number of people laid off, dismissed or made redundant over the period 1991 to 2006. While the data do not disaggregate redundancy from other forms of dismissal, it is evident that with the recent economic growth New Zealand has undergone and demand for labour outstripping supply, the occurrence of redundancy has declined.



For older workers, redundancy may lead to difficulties re-entering the workforce, or having to re-enter at a lower level. Difficulties re-entering the workforce for older people may also result in temporary and insecure employment.²³⁴

8.7 RETRAINING

With fluxes in industry and occupations, retraining is an important element of reskilling workers for new jobs. This is particularly important for older workers, females who have been out of the labour force and employees who have been made redundant. The New Zealand Council of Trade Unions⁸⁴ believes that employers who make workers redundant – whether due to downsizing, offshoring or new technology – should bear the cost of retraining the workers. This would assist these workers to either remain in the organisation but be placed in another position (when new technology is the cause of redundancy), or find it easier to get other jobs if they had to look for other work.

Older workers can find seeking employment daunting after spending most of their career in permanent employment. According to McGregor,²³⁵ older workers are more inclined to stay in the workforce if they receive adequate retraining (among other things). This is supported by the Office for Senior Citizens,²³⁶ which recommends employers develop retraining strategies and have retraining budgets set aside especially for older workers.

Similarly, women may feel insecure in their skills after having been out of the labour force after raising children. Retraining is encouraged by the National Advisory Council on the Employment of Women.²³⁷ It is particularly encouraged for women over the age of 45, who may have been out of the labour force for very extended periods of time. These women are likely to have developed their skills in a very different labour environment and may need to refresh or extend their basic qualifications.

With the decline in the manufacturing industry, it is necessary for traditional manufacturing workers (male, low-skilled, low-educated) to retrain in order to make themselves employable in other sectors – for example, the service sector.

8.8 KEY INFORMANT INTERVIEWS

The issues associated with retraining of workers were associated by key informants with their generalised concern at reduction of the training effort within industry, observed as most pronounced in industries with heavy reliance upon precarious forms of employment.

The differing capability of larger employers and SMEs was also a recurring theme in their comments. These concerns are reported in more specific contexts throughout this report. The level of concern was such that several commentators expressed the view that this differential was so pronounced as to indicate the need for revision of the basic settings for the regulation and enforcement of occupational health and safety. The two-tier approach explored by Gunningham and Johnstone²³⁸ seemed to frame a number of these inputs. Several key informants expressed their concerns that the rapid expansion of the economy in combination with demographic changes, industrial relations settings in the early 1990s and fundamental changes in the organisation of working arrangements had ‘swamped’ the move away from prescriptive to performance-based occupational health and safety regulation.

8.9 IMPLICATIONS FOR EXISTING AND EMERGING OHS RISKS

8.9.1 MIGRANT WORKERS

Migrants are often considered vulnerable when it comes to OHS. While we have already seen that a large majority of migrants issued with work visas are skilled migrants coming from countries with similar OHS practices as New Zealand, there are also a number of migrants (particularly seasonal migrants) who are unfamiliar with both New Zealand workplaces and OHS practices.

Of importance to note is the risk that temporary work residents may pose to current employees. In April 2005, New Zealand extended the screening for TB from persons with risk factors to all persons entering the country and intending to stay for six months. Previously, working holiday makers staying longer than six months had not been included.²³⁹ Though a disease often considered relegated to the third world, outbreaks have occurred in New Zealand in recent years, for example, the Hawke’s Bay outbreak in 2002 where infection primarily occurred in the workplace.

There are a number of ways to engage migrants in the issue of OHS. One initiative includes a safety information booklet published by New Zealand Safety Limited that is being used in adult migrant education classes.

Another little considered consequence of the increased use of temporary foreign workers is that workers possibly exposed to hazardous materials will leave the country and thus will not be monitored. Further, there is less incentive for employers to monitor exposures of these workers. In France, Thébaud-Mony and colleagues^{16, 211, 240–241} have sought to address some of these issues by recording elaborate job histories of workers in a particular region in order to gain some insights into exposures. Her study found that considerable disorganisation at work flowed from the use of contingent work arrangements.

8.9.2 OFFSHORING OF JOBS

There is little research available on the relationship of New Zealand offshore jobs to OHS, nor were the researchers able to find any current international literature on the implications of offshoring jobs to OHS.

8.9.3 SMALL AND MEDIUM BUSINESSES

There are mixed findings for whether small businesses have better or worse health and safety outcomes for employees. Sorensen et al.²⁴² found that ownership was important, with smaller enterprises having worse ergonomic, physical and chemical work environments. On the other hand, psychosocial factors were better in smaller workplaces, irrespective of ownership. Not surprisingly perhaps, the study found that the quality of OHS management systems and workplace assessment was far higher in larger enterprises (public and private) than smaller enterprises. This is consistent with our own observation that the shifting of production and service delivery to smaller enterprises (encouraged by downsizing/restructuring, outsourcing/subcontracting) and privatisation is conducive to disorganisation and a fracturing of the management of OHS²⁴³ – something that requires urgent recognition by policy makers.

A significant amount of OHS agency activity has focused on assisting small business with information on OHS and advice on how to comply with legislation. However, there is evidence that, with regard to some industries or small businesses, non-compliance is not only the result of ignorance but is affected by a complex array of other factors, including a calculated response to intense financial or competitive pressures, as in the case of small trucking operations, builders or farmers located at the bottom of an elaborate supply chain.^{59, 244}

Internationally, government agencies responsible for OHS have recognised the need to accommodate the rather different requirements of small business. This has included the production of guidance material targeted at small business (in terms of language, content and focus), the appointment of special advisors to help small business, integration of OHS into vocational training (though this is more valuable for trade-related small businesses than others where vocational training of small business operators is less common), the establishment of information and OHS improvement networks, facilitated requirements that small builders develop a safe building plan for each worksite (in Queensland) and even special licensing requirements (with regard to work permits and the like). The value of focusing on hazards specific to an area of small business (such as the major chemicals used in printing offices) rather than more generalised risk assessment and OHS management has been recognised.

8.9.4 UNPAID WORK

Unpaid work has implications for OHS, firstly because excessive amounts of unpaid work done outside the workplace can lead to lack of sleep, which may, in turn, lead to fatigue in the workplace, which is a widely known cause of many workplace injuries.

Second, unpaid family support (including that of children) is common in small businesses such as shops and farms. In farming in particular, for want of childcare, children can be exposed to risk of serious injury whether they are helping out (as with all-terrain vehicles (ATVs)) or simply accompanying their parents near dangerous machinery (like tractors or augers), especially in the context where depressed farm incomes oblige one or both parents to seek work outside the farm to supplement incomes.⁸⁰ While sometimes a difficult terrain, the development/facilitation of community-based programmes (including influential women's groups) to address known hazards (such as chemical use and machinery risks) as well as trained/experienced inspectors and targeted campaigns can mitigate these risks.

Third, there is belated recognition that unpaid voluntary labour is both extensive and involved in a wide range of activities – a number of which are potentially dangerous, such as homecare visits, seeking donations, repair/renovation of churches, working in drug rehabilitation/needle exchanges or helping the homeless. In Australia, like New Zealand, unpaid workers in the voluntary sector are covered by OHS legislation (which includes duties to others at work aside from paid employees), but interviews with inspectorates¹⁵ indicated that 'employers' had often been slow to comprehend their responsibilities and accommodate their practices accordingly. In recent years, large churches and charities have adopted a more professional approach to their volunteer workforce (including the appointment of specialist managers) but such changes appear exceptional amongst small to medium sized NGOs. Finally, a complex web of regulation can potentially apply to volunteer work (for a discussion with regard to Australia, see Murray²⁴⁵), and these issues need to be clarified as a starting point for policy interventions.

8.9.5 DELAYED RETIREMENT

Assessment of the effects of delayed retirement will need to take account of task demands where workers remain in their existing jobs, as well as other factors where older workers move to a new job as part of extending their working career. However, the OHS implications of delayed retirement mostly relate to having an increase in older workers in the workplace. The implications of an older workforce are discussed in Chapter 4.

8.9.6 REDUNDANCY

Redundancy not only impacts on the employees made redundant, but also on those retained and the HR personnel involved. The threat of redundancy can lead to increased stress in the workplace, which is known to have health and safety implications.

A New Zealand study²⁴⁶ has shown that redundancy can increase chances of self-harm leading to hospitalisation or death. The study was based around two meat processing plants in the Hawke's Bay area situated a few kilometres apart. The 1986 closure of one of the plants, resulting in job losses for 2,160 workers, provided a perfect opportunity to research the effects of redundancy on health, in particular, hospital admissions, cancer and morbidity, as most workers attended the same healthcare services. In 1994, the researchers (having received a 97 per cent response rate) found that involuntary job loss more than doubled the chances of self harm that would lead to death or hospitalisation. The same finding occurred in a Michigan study of redundancy.²⁴⁷

There is evidence that the health and wellbeing of older workers is more adversely affected by downsizing.²⁴⁸ Further, mature or older workers losing their jobs are more likely than younger workers to remain unemployed for longer periods (or permanently) – and thus suffer the well-documented adverse health effects associated with joblessness – or to obtain jobs that are markedly inferior in terms of working conditions than their previous

employment. The latter include insecure jobs that result in intermittent bouts of work and unemployment, which recent research suggests has a complex set of adverse health effects including those linked to poverty and psychological adjustment problems.^{77, 167} As another study²⁴⁹ demonstrates, for mature workers, the dichotomy between the health benefits of having a job as compared to being unemployed that has informed policy makers is too simplistic and ignores the serious health effects of poor quality and insecure jobs.

Few studies have assessed the potential ‘healthy worker effect’ associated with downsizing and redundancy. Redundancy programmes may remove workers, particularly older workers, with pre-existing illness or injury, or those who appear to have suffered most from previous downsizing cycles. A particularly robust group of survivors may be created, disguising negative effects on workers who retain their jobs and inflating differences with those who are laid off. This effect may be compounded by ‘presenteeism’ amongst surviving workers, where fear that reporting illness or taking sick leave may increase the likelihood of being targeted for future redundancy.^{250–251} To satisfactorily evaluate the ‘healthy worker effect’, it is necessary to collect baseline data before individual workers are notified of redundancy and compare the health and injury profiles of those who lose their jobs with those who retain them.

8.9.7 RETRAINING

Rather than retraining being a risk for workers, it is far more likely that a lack of retraining has implications for health and safety. Earlier in this chapter, a number of groups were identified as in particular need of retraining – women, older people and workers moving from one industry to another. The underlying similarity of these groups is the movement into new jobs. It is this which necessitates the need for training. Without adequate training in the operation of machines, or common pieces of equipment, these groups may be at risk of injury or illness. In a more fluid labour market, characterised by a greater incidence of job and occupation changes, the issue of retraining almost certainly requires increased attention from employers and policy makers.

8.10 RESEARCH AND SURVEILLANCE NEEDS

8.10.1 MIGRANTS

The European Agency for Safety and Health at Work has indicated a need for more research into migrants and OSH. While there is speculation that being a migrant increases risk of injury in the workplace in New Zealand, there is not a breadth of literature or research on this topic.

8.10.2 OFFSHORING OF WORK

There is little information available on jobs offshored by New Zealand companies, and it is difficult to envisage a database available any time soon. Further, the relationship between offshored jobs and OHS responsibilities for the parent company has not been widely researched. It is recommended that research in this area would be beneficial, due to the growing levels of offshoring in New Zealand (the most recent example being Fisher and Paykel’s April 2008 decision to close their Dunedin factory).

8.10.3 SMALL AND MEDIUM BUSINESSES

As noted in Chapter 6, a review undertaken in 2001¹⁷⁹ looked at the categories of small business (acknowledging the overlap with self-employment and subcontracting) and part-time permanent work. The 2001 review showed the majority of studies found that OHS outcomes were inferior for smaller businesses and workplaces than larger enterprises (these two overlapping but distinct subcategories were not always sufficiently differentiated by researchers). Studies we have examined since this review are largely consistent with this observation. (See, for example, Fabiano et al.²⁵²) Business size can also affect the reporting of injuries and serious incidents.²⁵³ A Danish study²⁴² that differentiated ownership from workplace size, while not contradicting this overall finding, did reveal some complexities highlighting the need for further research.

It is worth noting that this Danish study drew on two datasets, namely the Danish Work Environment Cohort Study and surveillance of health and safety activities in enterprises. These datasets enable OHS researchers and policy makers in Denmark to track the effects of a range of changes in workplaces. Given the similarity of population size between Denmark and New Zealand, a similar set of surveillance mechanisms should be workable in the latter, and warrants consideration, given the gaps in other surveillance mechanisms identified in this report.

In Denmark, there has been recognition that activities of government inspectorates had to recognise both the level of knowledge and capacity of particular employers to comply with OHS legislation as well as their willingness to comply (which might be affected by the competitiveness of the industry or other factors). One critical international policy debate related to this has been the extent to which small businesses can accommodate the shift to process/performance standards and management systems concepts (including the requirement to identify hazards and undertake risk assessment) that are increasingly significant in the post-Robens OHS legislation found in the UK, Australia, New Zealand and other countries.^{254–255}

To deal with large organisations able and willing to operate sophisticated OHS management systems, as well as small businesses with few resources or systems, operating in often unstable and fractured product and labour markets, Gunningham and Johnstone²³⁸ have proposed a two-tiered approach to enforcement, whereby inspectorates adopt different practices to accommodate these differences. At the same time, a number of incidents such as BP Texas City and Esso Longford have raised concerns about the capacity of OHS management systems that focus on routine incidents to deal with major hazard incidents, resulting, for example, in an increased interest in applying the ‘safety case’ regime of closely regulated systems to high-hazard workplaces like mines and chemical plants. Other research²⁵⁵ also indicates the effective implementation of OHS management systems requires more thought, resources and attention to feedback loops than many employers anticipate, with lapses often resulting in ‘paper compliance’ or major gaps or flaws that are often only revealed by a serious incident.²⁵⁶

8.10.4 OTHER RESEARCH AND SURVEILLANCE NEEDS

While there is a body of research on the health effects of redundancy/unemployment and several studies of intermittent employment,^{141, 167} there has been little research in the OHS effects of unpaid work (except possibly where this is associated with family helpers in small businesses).

CHANGES IN WORKFORCE REPRESENTATION



9.1 UNIONISATION

Union membership has, in effect, been compulsory in New Zealand since the 1930s, under a variety of legislative arrangements, for workers in the private sector, where a registered trade union had coverage of an occupational group. This law was altered in the 1980s, leading to a fall in union members, and the Employment Contracts Act in 1991 caused a further decrease in union membership numbers. The Employment Relations Act (ERA) of 2000 attempted to reverse this trend by making collective bargaining and trade union membership more accessible and attractive to employees. This was done by making unions the only organisation that can negotiate collective agreements and restricting application of the terms and conditions of a collective agreement to union members. Membership of trade unions remains voluntary, however, and the ERA has not resulted in a significant increase in either collective bargaining or union membership, except in the public sector.

Table 9.1 presents the dramatic fall in union membership numbers during the 1990s, with the most drastic drop occurring between 1991 and 1992. Numbers began to increase again in 1999. However, union density has, for the most part, continued to decrease. According to Blackwood et al.,²⁵⁷ union growth has primarily been achieved by CTU affiliated unions in the areas of health and community services, education, manufacturing, and transport, storage and communications.

TABLE 9.1 Trade unions, membership and union density, 1991–2006 ²⁵⁸						
Year	Union membership	Number of unions	Potential union membership		Union Density	
			Total employed labour force	Wage and salary earners	Union membership as a percentage of total employed labour force %	Union membership as a percentage of wage and salary earners %
Dec 1991	514,325	66	1,518,800	1,196,100	33.9	43.0
Dec 1992	428,160	58	1,539,500	1,203,900	27.9	35.6
Dec 1993	409,112	67	1,586,600	1,241,300	25.8	33.0
Dec 1994	375,906	82	1,664,900	1,314,100	22.6	21.0
Dec 1995	362,200	82	1,730,700	1,357,500	20.9	26.7
Dec 1996	338,967	83	1,768,200	1,409,300	18.2	24.1
Dec 1997	327,800	80	1,773,200	1,424,000	18.5	23.0
Dec 1998	306,687	83	1,760,900	1,399,100	17.4	21.9
Dec 1999	302,405	82	1,810,300	1,435,900	16.7	21.1
Dec 2000	318,519	134	1,848,100	1,477,300	17.2	21.6
Dec 2001	329,919	165	1,891,900	1,524,900	17.4	21.6
Dec 2002	334,783	174	1,935,600	1,566,400	17.3	21.4
Dec 2003	341,631	181	1,986,100	1,598,700	17.2	21.4
Dec 2004	354,058	170	2,073,800	1,676,200	17.1	21.1
Dec 2005	377,348	175	2,105,600	1,719,500	17.9	21.9
Dec 2006	382,538	166	2,109,800	1,764,500	18.1	21.7

While public sector employees made up nearly one-quarter (24 per cent) of the New Zealand labour force in 2005, they accounted for just over half (52 per cent) of union members.²⁵⁷ Union membership is proportionately smaller in retail and restaurants, though it was a strong growth area in 2006 (see Table 9.2). This is likely to be reflective of strong union campaigning in this industry.

TABLE 9.2		Distribution of union members and wage and salary earners across industry sectors, 2006 ²⁵⁸			
Industry	Union membership Dec 2006	Change in membership 2005–2006 (%)	Labour force Dec 2006 (000)	Change in labour force 2005–2006 (%)	New members breakdown (%)
Agriculture, fishing and forestry	3,015	-11	82.3	7.2	-7
Mining and related services	1,436	-7	6.7	6.0	-2
Manufacturing	75,588	-3	243.4	-2.7	-50
Energy and utility services	3,346	-8	8.4	6.0	-6
Construction and building services	5,555	7	132.0	16.5	-7
Retail, wholesale, restaurants, hotels	18,335	24	410.0	1.2	68
Transport, storage and communication	42,538	0.4	104.2	0.5	3
Finance, insurance and business services	10,934	-18	237.0	3.8	-47
Personal and other services	18,278	2	115.3	-0.9	7
Public and community services	203,513	3	425.4	4.1	127
Government administration and defence	33,049	-1	810.0	7.9	-4
Education	81,070	3	154.2	-0.6	48
Health and community services	89,394	5	182.2	6.3	83
Total/Average	382,538	1.4	1,764.5	2.6	100

9.2 FORMS OF EMPLOYMENT

It is recognised that neat categorisations of forms of employment are problematic because many self-employed workers or small businesses are independent subcontractors. The same applies to some home-based workers – an area where statistical information is lacking in many, if not most, countries. Further, when governments outsource work, it often entails privatisation. (For review of research into the health effects of privatisation, see Egan et al.²⁵⁹) It is beyond the province of this report to explore these complex interconnections in detail. (For a more detailed discussion of several of these complexities, see Quinlan and Bohle.⁶¹) Nonetheless, the current review is intended to provide some insights into areas pertinent to any consideration of the effects of changing work arrangements.

9.2.1 INDIVIDUAL EMPLOYMENT CONTRACTS

Individual contracts increased in the 1990s, due to the introduction of the Employment Contracts Act. Unfortunately, there are little (or, more accurately, no) data available on individual employment contracts.

9.2.2 SUBCONTRACTING

There are little to no data available about the extent of subcontracting in New Zealand. However, key informant interviews indicate there is a tendency, in recent times, for industries to revert to direct employment of labour and to reduce reliance on contracting/labour hire (particularly in the construction industry). Another driver for subcontracting is the government compliance costs associated with direct employment, of which OHS is one.

9.2.3 SELF-EMPLOYMENT

Self-employment (indicated by those claiming that they receive their main income from self-employment in the Household Labour Force Survey) has decreased from 57,897 in 2001 to 55,908 in 2006. There was a notable loss of over 5,000 self-employed people in agriculture, forestry and fishing – though this is following a general decrease in employment in that industry. The largest growth in self-employment occurred in construction, which grew by 23 per cent, or 1,773 jobs, between 2001 and 2006. This was followed by property and business services, which grew by 16 per cent, or 1,680 jobs. International literature suggests that self-employed people tend to work longer hours.¹⁶⁵

9.2.4 WORKING FROM HOME

Home-based workers are included in this section because there is considerable, though not complete, overlap between the categories. Many home-based workers are self-employed, work under some form of outsourcing arrangement or are subject to less direct and effective regulatory cover. There is good reason to include working from home in the section on subcontractors and self-employed workers.

Analysis of data⁸⁹ from the Time Use Survey found that 15 per cent of paid work is undertaken in the worker's own home. Home-based work is most common in the agricultural sector, primarily due to farmers considering their farms to be their home. If agricultural workers were not considered in the analysis, it would be possible that a lot less than 15 per cent of paid work would be performed in the home. However, this proportion of the workforce undertaking work at home is consistent with US figures.²⁶⁰

Working from home is assisted by the new way in which people interact in the office, or rather, the way they do not interact in the office. Many employees are just as likely to send an email to ask a colleague as close as a few metres away a question, rather than interact with them on a face-to-face basis. As people are becoming more accustomed to have less face-to-face communication with their colleagues, it is easier to accept that a colleague is no longer in the office and is actually working from home. Within the office, communication technology such as email and instant messaging has replaced phones and faxes as preferred methods of communicating, and it is these technologies that are likely to be available to workers in their home. According to the 2006 Census, 60 per cent of New Zealand households have connection to the internet, and it is highly likely that the 60 per cent are made up of professionals and highly-skilled workers, who are the more likely than blue collar, or low-skilled workers, to work from home. In addition, figures from Statistics New Zealand show that broadband use now exceeds dial-up, further increasing the ease with which people can work from home.

Dixon and Callister⁸⁹ found that the majority of people who work from home do not do so on a permanent basis; rather, they combine it with work in a conventional workplace. What this may indicate is increasing work intensification and an excessive workload, with employees needing to take work home in order to meet deadlines or increase their output. Another explanation lies in the suggestion that some employees may make use of working from home as a strategy for dealing with work-life conflict.

9.3 KEY INFORMANT INTERVIEWS

As reported in Chapter 8, several key informants expressed concern that the coincidence of wholesale change in labour market regulation in the early 1990s, in association with the seismic economic shifts required to address an increasingly globalised economy, has overwhelmed the ability of New Zealand industry to accommodate the shift from prescriptive to performance-based regulation of occupational health and safety. As reported elsewhere, a focus for their concern was the downturn in training effort that appears to have occurred in this context. While most discussion was focused on the general training effort, with emphasis upon skills training with incidental occupational health and safety effects, three commentators made specific reference to the downturn in unionisation with regard to its health and safety effect, mediated through training.

One informant involved with the union noted the severe downturn in the training of workplace-based occupational health and safety representatives. He correlated this directly with the impacts of labour market regulation upon unionisation. He observed the significant increase in the training of workplace representatives in recent years, with heavy involvement of the union movement. (The New Zealand Council of Trade Unions has trained 18,523 health and safety representatives since training programmes started in 2005.) The other two informants offering comment on these issues were from business and industry association backgrounds. Both noted that the fall-off in training for capability at workplace level had accompanied the shift in labour market regulation, and both expressed concern at this impact. While not overstating the significance of union involvement in the processes, they welcomed the resurgence in dedicated training effort.

These two commentators offered interesting perspectives on the indirect effects of the reduction in training of health and safety representatives. They acknowledged that a key source of supply for directly employed workplace safety officers was the ranks of workforce elected/appointed health and safety representatives. Both noted that the training of middle managers and supervisors in occupational health and safety was “not what it should be.” Again, with normal career progression, suitably trained and experienced health and safety representatives progressing to supervisory positions frequently augmented the familiarity of middle and senior management with the issues. Through these two mechanisms, the perceived fall-off in training of health and safety representatives during the 1990s has, in the view of these two informants, had significant impact upon the current sensitivity and responsiveness of supervisors and managers to the issues.

In addition to these two informants, most others noted with concern that the take-up of available occupational health and safety training by supervisors and managers had not been adequate for the purpose.

Interestingly, several key informants noted that self-employed tradespeople were another high-risk group, even where they were apparently prospering under high demand for their skills. The shift to self-employment carries a shift in the obligation to stay familiar with emerging hazards associated with their work. When questioned on this dynamic, all informants expressed grave doubts that self-employed persons were in a position to assume this added responsibility. Several suggested an increased role for trade and industry associations in targeting this group within the labour market.

9.4 IMPLICATIONS FOR EXISTING AND EMERGING OHS RISKS

9.4.1 UNIONISATION

Unions can be seen as one mechanism – almost certainly, the single most important mechanism – for enhancing employee ‘voice’ at work, so the role unions can play in enhancing OHS is a potentially critical one, as is collective

worker involvement more generally. David Walters has done extensive work in this area, as well as documenting the research of others. Walters and Nichols²⁶¹ provide a recent and relatively comprehensive overview of this research literature and associated policy debates, including the role of workplace committees and health and safety representatives (HSRs) provided for by the OHS legislation of many EU countries, Australia and Canada. Recent trends towards decollectivisation of industrial relations in countries like Australia appear to have had adverse consequences for OHS, notwithstanding the retention of OHS laws.²⁶²

9.4.2 FORMS OF EMPLOYMENT

Earlier research²⁶³ indicated that there is very limited surveillance of workplace exposures to hazardous substances in both Australia and New Zealand, and this is largely restricted to major companies. Changes to business organisation/practices and work identified in this report, including downsizing/restructuring and outsourcing by larger employers, the growth of small business/subcontractors, increased use of direct and indirect hire temporary workers, shorter job tenure and use of foreign/immigrant workers, make workplace-based surveillance of exposures even more problematic. While government OHS inspectors in Europe and Australia have devoted increased attention to hazardous substances, their capacity to monitor surveillance (even when it is mandated by law) is limited. This suggests that periodic surveys of chemical presence and usage across a range of industries is required (perhaps along lines similar to one undertaken in Denmark²⁶⁴), as well as some form of workforce monitoring designed to capture more transient groups of workers, if at all possible.

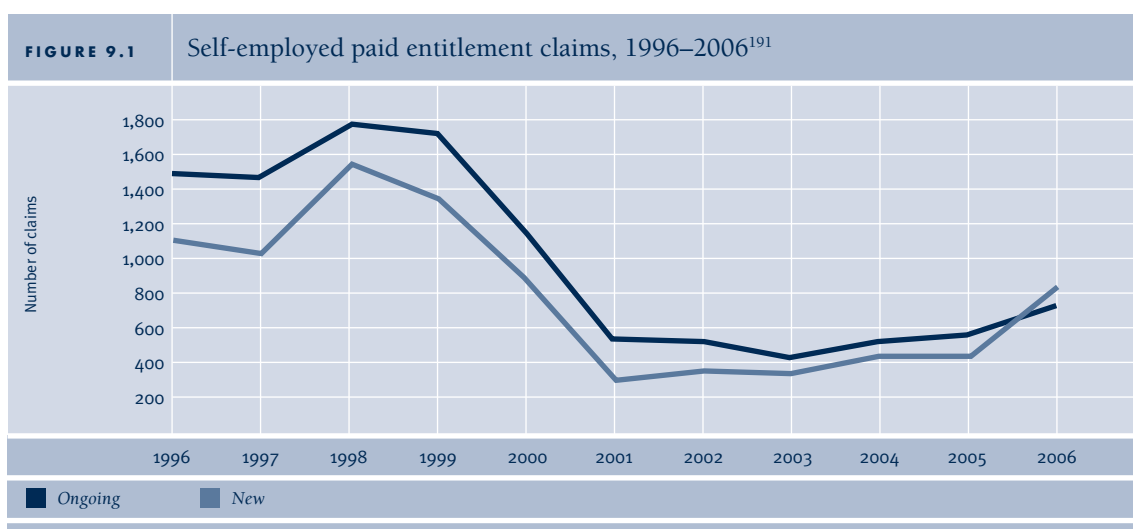
9.4.3 SUBCONTRACTING

There is research pointing to the reluctance of subcontractors to make injury claims because they cannot afford the time off – with the risk that the injury may become chronic and debilitating – and further, that temporary workers may be less aware or willing to exercise their entitlement for fear of jeopardising future employment.^{46, 265–266}

9.4.4 SELF-EMPLOYMENT

Whether self-employed workers are at greater risk of injury or illness has been the subject of some debate.²⁶⁷ This category overlaps with a number of others already discussed in this report, notably small business, home-based work and subcontracting. Earlier reference was also made to a study that self-employed workers are less likely to use protective equipment. A study²⁰¹ that compared self-employed and organisationally employed workers in Canada and Pakistan found that the former reported significantly higher overall burnout, emotional exhaustion, lack of accomplishment, non-work satisfaction and turnover intention.

In New Zealand, the number of work-related injury claims that have been paid out for self-employed persons has fallen dramatically since the 1990s, though it has steadily increased since 2000 (see Figure 9.1).



9.4.5 WORKING FROM HOME

There are a wide range of OHS implications relating to working at home. These include poor ergonomics and increased risk of accidents. It is expected that employers will still have a duty of care for their employees when they are working at home, but it is difficult to regulate this. For example, some organisations in New Zealand, while promoting the flexibility of working at home, are also aware of the implications it has for OHS. Brookers, an employer of approximately 150 people in New Zealand, offers all employees who work from home an OHS workplace assessment.²⁶⁸

9.5 RESEARCH AND SURVEILLANCE NEEDS

9.5.1 UNIONISATION

Paralleling the impact of declining unionisation is the need for industrial relations specialists in industry and government. Outsourcing, downsizing and the growth of contingent work is likely to have affected the scope of occupational health services (both directly and via its effects on workers' compensation coverage), and this, in turn, may have contributed to a decline in the number of OSH professionals who undertake these functions.^{270, 271} The NZCTU is involved with OHS monitoring and support, though it possible that more assistance is required from other government agencies.

9.5.2 FORMS OF EMPLOYMENT

With regard to psychosocial risks, the European Agency for Safety and Health at Work¹¹ has recognised that there are serious risks associated with changes to work described in our own report (including work intensification, precarious employment, poor work/non-work balance, an ageing workforce and the like). Again, existing official OHS datasets in New Zealand provide little useful data on psychosocial risks. The EU workforce survey conducted

on a five-yearly basis provides a basis for collecting some of this information, and its adoption in an Antipodean context warrants consideration.

9.5.3 SUBCONTRACTING

The association of subcontracting with poorer OHS outcomes in the international research literature, as well as investigation into serious workplace incidents, was substantially addressed elsewhere in this report. (See also Johnstone et al.,²⁷² EMCONET,⁸² and Quinlan and Bohle.⁶¹) The long hours worked by many self-employed subcontractors^{41, 200, 273} and the apparently growing phenomenon of presenteeism would not seem to be conducive to favourable work-life balance outcomes – though, again, more research is needed.

9.6.4 HOME-BASED WORK

There has been a slow-down in the frequency of research on home-based work since 2001 (five papers in total), compared to a mini surge of publications between 1998 and 2000 (12 in total). This trend is worrying, considering the policy implications of the almost uniformly negative findings to date and the widespread growth of both outsourcing and home-based work. More research is required to deepen current understanding, differentiating the effects of home-based work from those of other forms of outsourcing, differentiating home-based work by employment status and whether effects vary where home is more adjunct than a primary work location, or specifically examining franchise work as a structured form of subcontracting. No research on the second of these topics was uncovered.

SECTION TEN

MANAGING EMERGING OHS RISKS: IMPLICATIONS FOR

SURVEILLANCE AND RESEARCH PRIORITIES

10

Each of the previous chapters has finished with an assessment of implications of the trends and challenges identified for effective surveillance and further research priorities. This last chapter draws together some of the more general findings. It starts with insights obtained from interviews with key informants. This is followed by a consideration of the implications for policy in general and specific dimensions of working life. It finishes with suggestions concerning future research priorities.

10.1 KEY INFORMANT OBSERVATIONS

The informants were virtually unanimous in identifying industrial diseases of long latency and emerging psychosocial conditions as the greatest ‘blind spots’ within occupational health and safety and acknowledged that the increasingly diverse nature of working arrangements served to heighten their concerns. The majority also shared a concern about the implications of change in New Zealand workplaces for enforcement activity and models. Several were particularly concerned at the capacity constraints placed upon the Department of Labour as the regulator.

Frequently cited by key informants was the perceived decline in active enforcement of occupational health and safety standards. One informant observed that the number of inspectors in the building and construction sector has declined from 48 to 14 over the past decade. Demoralisation of the inspectorate was a perceived outcome among the majority of informants. ‘Change fatigue’ was also cited as a significant consideration, with numerous and recurring changes in the roles and responsibilities across the Department of Labour and the fragmentation of the jurisdiction. Several expressed bewilderment with the creation of ERMA as a separate jurisdiction. It was perceived that the science-driven resource base of ERMA was closely aligned with the emerging issues in occupational health and safety. The separate jurisdiction denied the potential for collaboration. The epidemiological skills within ERMA were viewed as precisely those needed to increase the acuity of workplace health and safety surveillance arrangements and to confront a variety of emerging hazards, particularly those of a biological nature. One industry association was particularly concerned that ERMA’s lack of connectedness with workplaces reduced its sensitivity to the diverse needs of industry. Further, the strong ‘science’ emphasis in combination with this remoteness was observed to be diluting opportunities for collaboration between government agencies with overlapping jurisdictions, and between agencies and industry associations.

Several informants suggested that government agencies, even if effectively organised, would still be hard pressed to address the increasing diversity and complexity of the New Zealand labour market. This led them to the conclusion that new approaches to regulation and enforcement would need to be explored in the near future.

Among the alternatives cited by informants was the use of multilayered enforcement regimes to address the needs of industry. Several informants were concerned that the expectations placed upon the labour inspectorate were becoming increasingly contradictory and unrealistic. Central to this was the segmented responses of industry to the performance-based nature of modern occupational health and safety regulation. This is perceived as most pronounced between SMEs and larger employers. Smaller employers tended to adopt a “just tell me what I have to do to comply” approach, while larger employers generally had the capacity to apply more performance-based approaches and to enjoy the benefits accruing as a result of the greater flexibility offered. This led several informants to suggest that significant policy revision would be necessary to address these diverse needs.

The Australian work of Gunningham and Johnstone²⁰⁴ seemed to have significant currency among the informant group. This was particularly with regard to the use of alternative enforcement regimes, including the use of enforceable undertakings. Informants indicated that, for larger industries and employers, the facility of a version of a ‘safety case’ regime may be suitable. They felt that this would then free up resources to meet the more prescriptive compliance needs of the SMEs. No informant was able to address the question of the increased

burden of skill and knowledge that such regimes demand of inspectors, although several linked the discussion to the wisdom of combining the Department of Labour and ERMA capabilities for this purpose.

Several informants drew linkages between this set of issues and the requirement for enhanced health and safety surveillance arrangements. They suggested that, in response to requests for greater flexibility in compliance/enforcement by larger employers and industries, a reasonable *quid pro quo* was for the introduction of surveillance arrangements. Further, the aggregated evidence emerging from surveillance arrangements struck in these circumstances could be shared across the industries concerned.

10.2 POLICY IMPLICATIONS

Without a serious effort to make work organisation and quality a key component of socio-economic policy, including new forms of regulation and the elimination of incompatible policies, it will be difficult to achieve long-term improvements in the nature of work, including its OHS effects. Such developments require mechanisms for the interests of all groups to be recognised and the full costs and benefits of various types of work arrangement to be properly assessed. It is worth noting that efforts have been made by researchers to validate measures of quality of work. It is also worth noting that OHS, job security, family needs, social needs (collegiality at work and leisure time outside work) and organisational recognition – factors all influenced by recent changes in work described in this report – figure prominently in such measures. (See, for example, Sirgy et al.²⁷⁴)

One approach to addressing continuing work and labour changes is to develop either a set of minimum work conditions (such as the International Labour Organisation's decent work agenda) or to try and promote work quality as a central concept in government policy. Several countries claim to pursue a 'high productivity/high quality' path, but seldom support it with significant shifts in policy and a willingness to confront the 'flexible work' mantra. Gallie²⁷⁵ found the focus on quality of working life in Scandinavian countries had achieved valuable outcomes. The Scandinavian work environment concept provided for a broader and more integrated approach to working life that incorporated OHS, gender equality, work-family balance and industrial relations. Allvin and Aronsson²⁷⁶ argue the increasingly polarised labour market that is a feature of the 'new economy' threatened the concept's relevance (and it suffered a further setback with the election of a neo-liberal government in Sweden in 2006 that cut funding to various agencies, including the inspectorate, and closed the National Institute for Working Life). Nevertheless, the Scandinavian concept of work quality is worthy of consideration. More modest attempts to develop an integrated approach along essentially similar lines within a particular industry can be identified in other countries such as Canada.²⁷⁷

With regard to the problem of incompatible or inconsistent government policies, several points can be raised. Government OHS agencies are being increasingly asked to address problems that have arisen as a result of policies promoted by other areas of government (such as competitive tendering, outsourcing, downsizing, guestworker programmes and labour market flexibility). The remedies they have devised try as far as possible to accommodate these policies. But these policies and business practices themselves should not be above questioning, or at least should be subject to assessment and controls where appropriate. Nor is it axiomatic that placing restrictions on these policies or practices will impose additional costs in terms of economic efficiency (even ignoring the substantial health costs identified in this report). For example, echoing earlier research (including that by Wayne Cascio et al.²⁷⁸ a decade ago), a recent study²⁷⁹ of the performance effects of downsizing in North America found that firms that substantially cut jobs failed to improve their labour productivity and operational indebtedness. Indeed, those that made the most substantial cuts as a proportion of their workforce experienced a significant deterioration in their operational indebtedness. Similarly, a Canadian study²⁸⁰ of managed competition in homecare found, contrary to promises made by its proponents, this market-based reform resulted in higher per-visit costs and poorer quality in the form of reduced access to services.

10.2.1 PRECARIOUS AND NON-STANDARD WORK

Earlier sections of this report identified a number of externalities and policy challenges posed by the growth of flexible work arrangements as well as changes to working hours. It needs to be stressed that, while it is useful to isolate particular changes at work in order to explain these changes and examine their effects on health, in many cases, various forms of changes interact (such as the concentration of both immigrants and young workers in temporary jobs). This also needs to be recognised when attempts are made to chart these changes or to devise policy interventions. Some researchers have pointed to the interconnection in health effects and contributory factors. For example, changes to work hours, work arrangements and work intensity can impact on work/non-work conflict. A recent study¹⁵² found the exacerbation of work/non-work conflict was the result of high workload pressure, long working hours, unsupportive management and weak employee control (especially with regard to workload and taking time off).

For the regulatory agency responsible for safeguarding workers, the growth of precarious employment or contingent work arrangements present two overlapping sets of challenges. First, as previously indicated in Chapter 6, there is evidence that these arrangements lead to an overall deterioration in OHS outcomes and, as such, off-set efforts to improve these outcomes over time. Second, there is evidence that the growth of flexible work arrangements also weakens, if not undermines, the very regulatory regimes designed both to protect workers from injury and disease and to provide compensation and rehabilitation/return to work of those who suffer an injury or disease through their employment.^{13, 272, 276, 281} This is touched on by studies^{186, 283} in the review results summarised earlier, but there is other research pointing to problems in this regard, including, for example, studies indicating that self-employed workers are less likely to use protective equipment (including that mandated by legislation) than employees.²⁸⁴

The more vulnerable labour market position of many contingent workers may impair their capacity to take time off for non-work-related injuries. There is little research in this area, but one British study²⁸⁵ of workers requiring hip or knee surgery (the origins of this injury were not specified) found that job retention was poorer for those working for small companies – something the study found concerning, given the prevalence of downsizing and subcontracting services to smaller enterprises. Premature retirement due to chronic disabling injury or the inability to retain employment is likely to have spillover effects on family and other dependants, as well as the broader community, even where other forms of social safety nets are in place.

In the European Union, there have been efforts to make the nexus between OHS and insecure or contingent jobs a central consideration in long-term socio-economic policies. A key driver is the European Foundation for the Improvement of Living and Working Conditions (EFILWC) based in Dublin in the 1990s. The Foundation developed a workforce survey (undertaken every five years) that allowed it to track changes in physical, and more particularly, psychosocial working conditions, including the effect of job insecurity and contingent work arrangements. The EFILWC used its survey evidence and other data to produce work quality indicators (including OHS) that took account of changing work arrangements and could be applied in policy interventions by EU members. Despite evidence that this approach was needed and practical, the initiative stalled in the face of opposition from interests supporting flexible work and neo-liberal policies more generally.²⁸⁶

Some concerns have been raised about the response rate with regard to the EFILWC survey. Contact was made with an epidemiologist based at Barcelona University (Dr Joan Benach²⁸⁷), who has analysed the survey on a number of occasions (and published the results in journals such as the *Journal of Epidemiology and Community Health*) and who was therefore familiar with the survey and its response rate. Dr Benach indicated that the response rates had varied considerably between countries in both the 1995 and 2000 surveys (for example, 35 per cent in Denmark to 81 per cent in Austria in 1995, and from 39 per cent in Italy to 76 per cent in Germany in 2000). Dr Benach had not examined the 2005 survey but suspected response rate variations were similar to earlier surveys, given the entry of new eastern European member countries. In Dr Benach's view, the surveys are helpful and the best available, but flawed. He believed the recent EMCONET report⁸² for the World Health Organisation – of which he was an editor – provided guidance as to how such surveys could be improved. Clearly, there are limitations with a survey confined to 1,000 workers from each country (irrespective of population), including an inability to do detailed analysis of results disaggregated by industry. A larger survey would also be better with regard to more refined analysis of particular employment categories (such as different types of temporary employment). Nonetheless, the survey does provide insights into the health effects of changes of work that are not being picked up by alternative sources, in a relatively cost efficient manner. The fact that the survey has been conducted over 20 years also enhances its potential value. Having said this, note should be taken of the points raised by Dr Benach and the potential to improve this instrument.

10.2.2 REGULATORY MATERIAL

Most Australian jurisdictions have prepared guidance material in relation to labour hire/agency workers and call centre work, while agencies in a number of countries have prepared guidance material on home-based work or telework. Other guidance material or information makes some reference to work arrangements. For example, material on bullying, harassment and violence at work will refer to staffing levels as one of the factors that must be considered. More systematic discussions of downsizing/restructuring and psychosocial risk factors are uncommon. (For an exception, see the hidden hazards guide produced by Workplace Standards Tasmania.²⁸⁸) Guidance material produced in industries where subcontracting is pervasive, such as construction, will sometimes refer to these arrangements. Less commonly, guidance material on industries like hospitality will refer to the extensive use of temporary workers.¹³ The same point applies to guidance material on the engagement of younger workers, immigrants or new workers – even though the majority of young workers, for example, are engaged in temporary jobs.¹³ Some agencies have also pointed to the need to ensure that seasonal, temporary and contract workers are involved in workplace consultation and risk assessment.²¹⁴

10.2.3 REGULATION AND MONITORING

There is evidence that some inspectorates have modified workplace visit, monitoring and enforcement practices (ranging from the issuing of verbal directions and improvement notices through to prosecutions) to better meet the challenges posed by changed work arrangements. Examples include special campaigns on behalf of seasonal agricultural workers (often foreign-born), publicity campaigns followed by blitzes, and strategic prosecutions (as in high profile cases in the labour industry). Without discounting the value of these activities, it needs to be noted that the responses are largely reactive to a particular issue rather than being informed by a more strategic understanding of changes in work organisation. The result is that some problem areas remain unaddressed and interventions often do not target root causes. For example, the general duty provisions in OHS legislation in Australia (similar to that of New Zealand and other countries) require a risk assessment and consultation process to be undertaken when implementing significant changes to the workplace and work processes. Nevertheless,

these provisions have seldom been monitored, let alone enforced, when organisations undertake large-scale restructuring/downsizing, even though agencies are often well aware of the connection between these changes and worse OHS outcomes.^{15, 289}

To be fair, one reason for this fragmented and partial response is that government inspectorates simply lack the staffing and other resources to implement a more systematic response. They must also deal with the retreat of collectivist industrial relations, which have removed key basic labour standards that can affect OHS (such as those relating to wage rates/systems, rest breaks and hours of work – see, for example, Hooker²⁹⁰), especially in the context of contingent work arrangements and contradictory government policies that encourage these problematic work arrangements (such as privatisation, competitive tendering, outsourcing, downsizing and the use of direct hire and agency temporary labour).

There is also some recognition of the need to direct regulation and enforcement measures to upper-level duty holders in supply chains – such as principal contractors, designers, suppliers, importers and manufacturers – something the multiple duty holder provisions in post-Robens OHS law have helped to facilitate. In Australia, regulations designed to safeguard home-based clothing workers rely on integrating industrial relations, OHS and workers' compensation rights and entitlements providing contract-tracking mechanisms and presumed responsibility at the top of the supply chain (for example, retailers and fashion houses²⁹¹). Analogous measures have been introduced in the long-haul trucking industry (through chain of responsibility and OHS laws) – an industry that has experiences similar to those documented in the Storey report²⁹² in New Zealand (see also Quinlan et al.²⁹³ and James et al.²¹²). A more voluntary approach to regulating supply chains was introduced in the UK following the drowning of 19 Chinese cockleshell collectors.²¹² As a recent World Health Report of employment conditions⁸² has noted, the regulation of global supply chains remains largely unaddressed, although several of the national ones just mentioned may provide a model.

In Australia, regulatory agencies have targeted principal contractors in prosecutions following serious incidents, have prosecuted both host and labour hire firms and have promoted memoranda of understanding with large construction firms that require them to implement management control standards on all subcontractors they engage.

10.2.4 FLEXIBLE WORKING HOURS

Beyond the immediate effects on regulatory regimes designed to protect workers or to provide compensation/rehabilitation to those suffering an injury or disease, the growth of flexible work arrangements raises some broader public health issues. An argument mounted in favour of flexible work is that it contributes to greater overall employment levels, the benefits of which include reducing the known adverse health effects of unemployment.²⁹⁴ However, even if other externalities are ignored, the health advantage of promoting employment at the expense of working conditions is questionable. There is now compelling evidence that job insecurity and a number of contingent work arrangements (notably subcontracting, home-based work and temporary employment) have serious and often long-term effects on worker health and wellbeing. For other flexible work arrangements, such as permanent part-time work, limited research has pointed to positive health effects, but far more research is needed across a range of occupations (taking into consideration the ability of workers to influence their hours and multiple job holding) as well as research focused on injury/safety outcomes. Even if the adverse effects of the changes just mentioned are not, on average, as large as those found amongst the long-term unemployed (although Swedish²⁹⁵ and Australian²⁴⁹ evidence indicates a narrowing gap), a number of researchers have contended that the adverse health effects of poor-quality jobs, entailing high insecurity and job strain, could match those of unemployment.^{296–297}

Account should also be taken of selection effects²⁹⁸ as well as the effects of ‘skidding’ due to retrenchment, lengthy episodes of intermittent work and unemployment^{167, 299} and the stress for workers and their families of job transfers in a more volatile labour market.³⁰⁰ When assessing net health effects, it should be noted that, in New Zealand, and indeed most industrialised countries, far more people occupy contingent jobs or experience job insecurity than are unemployed. Overall, it appears probable that any health gains from reduced unemployment have been swamped by the losses associated with job insecurity and contingent work.^{82, 171, 249}

10.2.5 RISK ASSESSMENT, SURVEILLANCE AND INTERVENTIONS

Looking beyond the government sphere, changes to work also require a reconsideration of OHS management practices, including risk assessment, surveillance and interventions. For example, as Nytro et al.³⁰¹ and Saksvik et al.³⁰² have observed, interventions to manage work-related stress need to take more account of downsizing and other contextual effects of workplace change, not regard them as ‘aberrant noise’. Further, while a number of employers have developed elaborate practices for managing subcontractors and agency workers, for example, these measures are by no means universal (even in industries making widespread use of such arrangements), and even where present, effective implementation can be a serious issue. For their part, a number of unions have also sought to safeguard the OHS of members in situations of downsizing/restructuring or the widespread use of contractors and temporary workers, but, as with employers, these efforts remain sporadic.

10.2.6 WORKERS’ COMPENSATION

One externality of less concern to New Zealand (with its national accident insurance scheme) – but worth identifying because it indicates a policy solution and advantage of existing regulatory arrangements – is that of the increasingly problematic workers’ compensation coverage and cost-shifting. In some countries, there is evidence that the growth of contingent work arrangements has resulted in a drop in coverage of workers under workers’ compensation (and lower claim rates amongst those eligible), leading to cost-shifting to the general healthcare and social security system.^{266, 303} This places an additional financial burden on government and the community, puts families of affected workers at a social disadvantage (due to financial burdens and stress) and entails a set of socially disruptive incentives.²⁶⁶

Even leaving the questions of cost-shifting and compensation coverage to one side, there are still issues about the capacity to make claims/take time off if necessary, the prospects of returning to work after injury, or the prospects of retaining a job following an injury, whether that be work-related or not.

10.3 FUTURE RESEARCH

10.3.1 DATA COLLECTION

Leaving the policy debate to one side, the EFILWC workforce survey instrument mentioned earlier in this report warrants comment. It is important to note that, aside from an assessment of occupational safety and health programmes in small businesses undertaken by Tony Lamontagne and colleagues³² in Victoria, there is nothing similar to this survey in Australia or New Zealand. The EFILWC survey instrument could provide a remedy to a number of deficiencies identified in this report. It would not only provide a means of tracking changes in work and

their perceived effects on health and wellbeing that would fill important gaps in present available statistics, but would also enable benchmarking against comparable countries in the EU. The EU survey provides relatively cost-effective insights into the health effects brought about by the changing nature of work that are not being picked up by alternative data sources. The fact that the survey has been conducted over 20 years also enhances its potential value.

Research on downsizing and job insecurity has been dominated by quantitative methods (only three of 61 studies collected qualitative data). More qualitative studies would be useful, as they are more likely to bring to light subtle processes by which downsizing and organisational change influence workers' attitudes, behaviour and work practices, and a greater understanding of how these changes influence their health and safety. Further, research to date has focused disproportionately on the manufacturing, healthcare and public sectors. These sectors have traditionally been dominated by full-time work and permanent forms of employment. More work is now required in other industry sectors, particularly transport, construction, mining and the rapidly growing service sector, to more accurately assess the influence of part-time and contingent forms of employment on OHS issues.

There is also limited knowledge about the organisational sources of job insecurity. For example, it would be valuable to know more about the effects of downsizing on the employment contracts of workers who are retained and whether these contracts increase or decrease job security. More detailed description of the organisational processes associated with different forms of downsizing and restructuring may identify differential effects on variables such as work intensity and job insecurity. At present, it is unclear to what extent the samples in many job insecurity studies include temporary employees, as temporary jobs may replace permanent ones during downsizing. Job insecurity amongst permanent workers may also be increased by various mechanisms, such as repeated cycles of downsizing, informal and ambiguous forms of restructuring, outsourcing, privatisation or competitive tendering, and combinations of these processes. The effect that these repeated cycles may have on stress levels and the potential flow-on effect to other workplace injury requires careful measurement and examination.

Several key informants expressed concern that New Zealand was not well positioned to monitor the increased overall time exposures for workers continuing in the workforce. They noted that the data sets available in other jurisdictions, through the workers' compensation statistics, were relatively limited in the case of New Zealand. While noting that all workers' compensation data sets were notoriously unreliable in tracking industrial disease, especially of long latency, the arrangements in New Zealand were particularly problematic. This was due to the restriction of ACC claims to a relatively small cluster of scheduled diseases under the prevailing ACC settings. The cited exception to this general case was noise-induced hearing loss.

Apart from data collection specific to OHS, there is also a need for New Zealand (most likely, through its national statistical agency) to collect data on precarious forms of employment. This report has found that the increasing incidences of casual, temporary and subcontracting work require more thorough data to be available in order to analyse the changes that New Zealand is encountering. This could be either through the reworking of a current instrument, like the Household Labour Force Survey, or the creation of a smaller survey focusing on forms of precarious work.

Reviewing the research considered in this report, a number of observations can be made with regard to the design of future research:

- First, greater clarity is required with regard to key definitions of what is being explored. In some studies, part-time and temporary work were not distinguished. In many studies, temporary work is treated as a generic category without sufficient attention to identifying subgroups (seasonal workers, part-time and full-time temporary workers, fixed-term contract workers and direct/indirect hire temporary workers). Similar problems arise in relation to subcontracting and home-based work. Studies of a more differentiated set of employment or work arrangements are required.

- Second, greater recognition needs to be given to exposure (based on hours worked) and multiple job holding.
- Third, given evidence of spillover effects, there is a greater need for longitudinal research to measure changes over time.
- Fourth, studies should try to encompass a more complete array of health and injury measures. For example, there are relatively few studies of exposure to hazardous substances/work-related cancers or the links to changed work arrangements. (For an exception, see the work of Thébaud-Mony and colleagues in France.^{16, 211, 240–241}) While a number of multiple measure studies found health and injury outcomes were generally consistent, some research (including a recent New Zealand study by Schweder¹⁸⁹) indicates that, for some workers at least (such as some permanent part-time workers and seasonal workers), there is an elevated risk of injury, but health outcomes are equal to or even superior to those of permanent full-time workers.
- Fifth, there is a need to reconcile some apparently inconsistent sets of results of research into job insecurity and precarious employment. For example, some studies have identified increased incidence of sickness-related absenteeism while other studies point to an increase of the precisely opposite phenomenon – presenteeism. The issue of presenteeism and multiple factor impact are discussed further below.
- Sixth, there is a need to take more account of institutional and regulatory factors. Whether workers are covered by collective agreements and whether they are members of a union, for example, can affect their working conditions and access to legal rights and entitlements (both pre- and post-injury). Further, access to knowledge and regulatory protection can be important, although it receives little attention in most explanations of OHS outcomes.

As noted at several points in this report, the tracking of hazardous exposures (let alone multiple hazardous exposures) presents major difficulties in the case of temporary workers and subcontractors, since regular changes of jobs will make conventional cohort studies very difficult, if not impossible, to undertake. Some methodologies to address this may be drawn from public health researchers (especially those examining geographically mobile and dispersed groups) as well as the detailed job histories being constructed by Thébaud-Mony and colleagues in France.^{16, 211, 240–241}

10.3.2 MULTIPLE FACTOR IMPACT

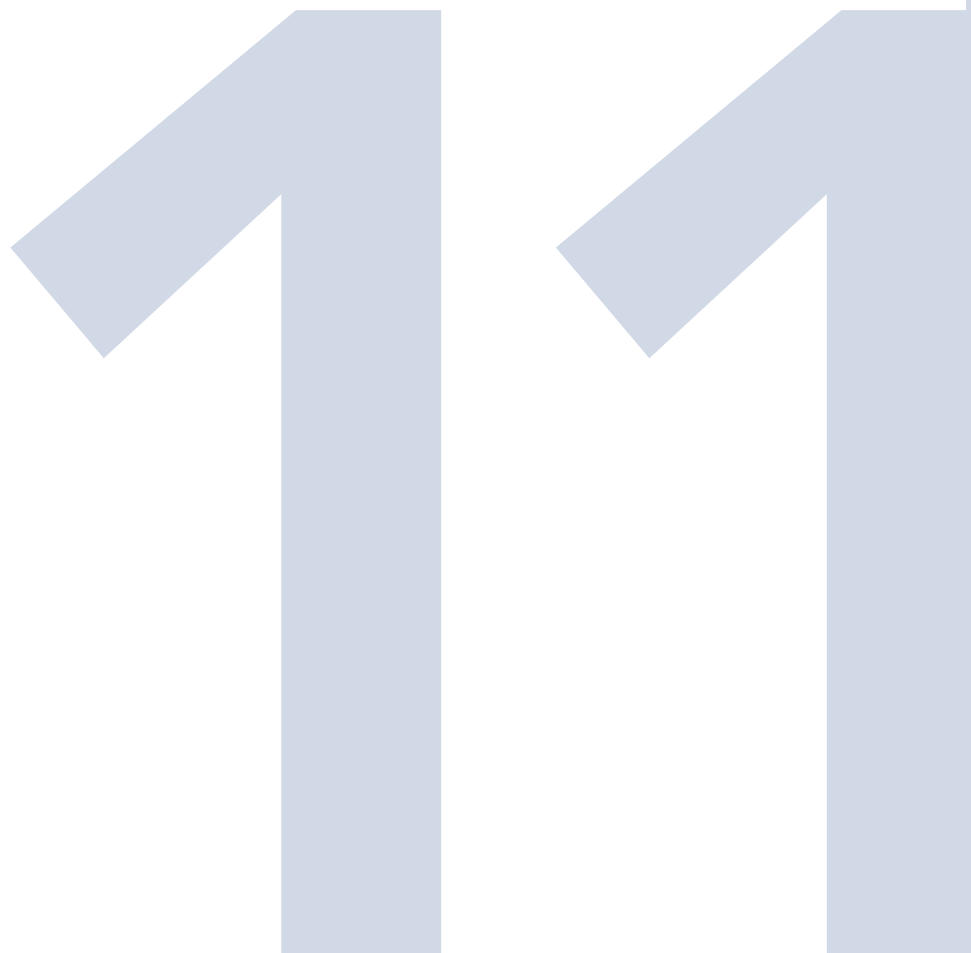
It is apparent that workers will fit into multiple categories discussed in this report at any one time, or throughout their career. There is often a complex interrelationship for individuals between hours of work, excessive paid and unpaid workloads, precarious employment, technological usage, forms of employment and other factors that may impact on an individual's occupational health and safety. For example, an individual may work excessive hours on shift work in multiple jobs, or a temporary worker may be subject to the OHS implications of excessive turnover. Once again, this flags an ongoing surveillance issue and raises the question of what regulatory response is appropriate. It should be clear that any future research on the impacts of working patterns and conditions should take into account the multi-factor impacts.

10.3.3 PRESENTEEISM

Very few international longitudinal studies published to date have addressed the effect of presenteeism directly, or provided sufficient data for others to reliably evaluate it. Nevertheless, the issue of presenteeism warrants recognition in its own right. The increased tendency for workers to be reluctant to remove themselves from the workplace when injured or ill has been connected to downsizing and restructuring. However, there has been little effort to measure the health effects of this reluctance. In addition, there is some evidence that presenteeism has its own impacts on health, not simply by increasing the risk of the transmission of illness in the workplace but also because it may contribute to long hours and physical and emotional exhaustion/burnout.^{304–306} In high hazard workplaces, such as mines, the fatigue or difficulty concentrating experienced by an ill worker may increase personal risk and has the potential to put co-workers at risk. However, we are not aware of any studies into these potential OHS issues. Presenteeism may also be found amongst temporary workers, particularly those who are only paid for hours worked (i.e. casual employees). Again, we are aware of no studies exploring this, although it would be consistent with studies that have identified reluctance by casual workers to reject a job call for fear this may affect future shift prospects.

In conclusion, growing recognition of the risks posed by altered work arrangements has only partly found its way into the activities of OHS inspectorates and related agencies (like those responsible for research/standard setting and workers' compensation). Research on the effects of changing work arrangements on regulatory regimes, understanding of legal obligations and compliance has generally identified a number of serious shortcomings requiring attention.^{272, 303, 307–309} Regulatory responses have been fragmented, although there have been a number of highly innovative interventions.

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APPENDICES

APPENDIX 1: KEY INFORMANTS

A range of key informants were selected from key organisations in New Zealand. These organisations are listed below. However, the names of key informants are not included due to privacy concerns.

Building and Construction Industry Training Organisation

Construction Industry Council

Business NZ

Environment Risk Management Authority

New Zealand Chemical Industries Council

New Zealand Ergonomics Society

New Zealand Council of Trade Unions

Standards New Zealand

Department of Labour

Accident Compensation Corporation

New Zealand Timber Industry Federation

Electrical Plumbing and Manufacturing Union

New Zealand Institute of Safety Management

New Zealand Safety Council



National Occupational Health
and Safety Advisory Committee

Komitii Teihutolu Mahi A-Motu Hauora me te Haumaru